BLM LIBRARY
88075356

89-337

JUL 1989

FINAL

ENVIRONMENTAL ASSESSMENT PROPOSED MOTHER LODE PROJECT

Prepared by

Bureau of Land Management
Battle Mountain District
Tonopah Resource Area
Tonopah, Nevada

With the Assistance of

ENSR Consulting and Engineering
Alameda, California

July 1989

ENSR

HD
243
.N3
M684
1989b

#1090680199
ID;88075356
HD
243
.N3
M684
1989b

FINAL

ENVIRONMENTAL ASSESSMENT PROPOSED MOTHER LODE PROJECT

Prepared by

Bureau of Land Management
Battle Mountain District
Tonopah Resource Area
Tonopah, Nevada

With the Assistance of

ENSR Consulting and Engineering
Alameda, California

July 1989

BLM Library
Denver Federal Center
Bldg. 50, OC-521
P.O. Box 25047
Denver, CO 80225

FINAL
ENVIRONMENTAL ASSESSMENT
PROPOSED MOTHER LODE PROJECT

Prepared by
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Battle Mountain District
Tonopah Resource Area
Tonopah, Nevada

With the Assistance of
ENSR Consulting and Engineering
1320 Harbor Bay Parkway
Alameda, California 94501

Abstract: This Final Environmental Assessment (EA) summarizes the environmental analysis of the Mother Lode Project, a precious metals extraction operation proposed by the U.S. Nevada Gold Search Joint Venture (USNGS) in southern Nye County, Nevada. The project would involve the construction, operation, and abandonment of an open-pit mine and processing facilities on public land administered by the Bureau of Land Management (BLM). The proposed project is described in a Plan of Operations submitted to the BLM Tonopah Resource Area, Battle Mountain District, which is responsible for reviewing the plan to determine compliance with BLM regulations governing surface mining under the General Mining Laws (43 CFR 3809) and the implementing regulations (40 CFR 1505) of the National Environmental Policy Act (NEPA). As part of BLM's review process, the Draft EA described the projected impacts of the proposed mining operation on the natural and human environment. Based on public input and the design of the proposed facilities, the environmental analysis emphasized the following affected resources: air quality; groundwater and surface water quantity and quality; soils and reclamation potential; vegetation and wildlife; cultural resources; socioeconomics and community resources; and aesthetics. The analysis considered the No Action Alternative and two facility location alternatives.

This Final EA is considered a supplemental document to the Draft EA. The minor revisions to the EA arising from public comments are incorporated as errata in Appendix A of this Final EA. The Final EA documents the comments received during the public review period. It also documents the BLM's Finding of No Significant Impact and the Agency Preferred Alternative for the Mother Lode Project, including the mitigation measures stipulated in the BLM's Record of Decision.

TABLE OF CONTENTS

SUMMARY S-1

APPENDIX A. ERRATA TO DRAFT EA A-1

APPENDIX B. COMMENTS ON DRAFT EA B-1

SUMMARY

Introduction

This Final Environmental Assessment (EA) summarizes the conclusions of environmental analyses of the proposed Mother Lode Project, a precious metals mining and processing operation near Beatty in southern Nye County, Nevada. The proposed project would involve the construction, operation, and abandonment of facilities for extracting and processing gold ore.

U.S. Nevada Gold Search Joint Venture (USNGS) proposes to mine approximately 600,000 tons of ore per year. At this mining rate, gold production is estimated at approximately 25,000 ounces of gold per year. The project would have an estimated 2-year life of operation, based on current estimates of potential reserves.

Major project facilities would include an open pit; waste rock disposal area; stockpile areas for topsoil and sulfide ore; leach pads; and ancillary support buildings (maintenance shop and trailers, office, laboratory, and recovery building). The surface disturbance would total approximately 75 acres of public land.

Alternatives to the proposed action were analyzed in the Draft EA. Alternatives considered in detail in the analysis included the No Action Alternative and two facility location alternatives. An alternative of backfilling the open pit was initially considered but was subsequently eliminated from detailed analysis in the EA for a combination of economic, technical, and environmental reasons.

The proposed Plan of Operations for the Mother Lode Project addressed in this EA is projected to have a 3-year life, including construction, operation, and reclamation. USNGS' groundwater permits from the State Engineer cover a 7-year period; however, if USNGS proposes to extend their operation beyond the initial 3-year period, the project expansion would be subject to additional environmental analysis by the BLM.

The BLM Record of Decision for the Mother Lode Project is on file in the Battle Mountain District, Tonopah Resource Area Office of the BLM.

Public Involvement

A public scoping process was conducted prior to preparation of the EA in order to solicit public input on the important issues and concerns associated with the proposed project. This process included mailings of public scoping documents to agencies, organizations, and individuals; a public scoping meeting in Beatty on February 1, 1989; a 30-day written comment period; and meetings with local, state, and federal governmental officials and representatives of community services. The scoping process identified the following environmental resources for analysis in the EA:

- Water Resources
- Socioeconomics
- Air Quality
- Wildlife
- Cultural Resources
- Visual Resources

In addition to these resources, impacts to geology and mineral resources, soils, vegetation, land use, visual resources, noise, and transportation were also evaluated in the Draft EA.

The Draft EA was circulated for review by federal, state, and local government agencies and interested individuals, and a public meeting was held in Beatty on June 1, 1989. The majority of the comments made at the public meeting were specific questions about the proposed project and reclamation plan, and concerns about potential impacts on water resources and Beatty's economy. Letters of comment were received from federal and state agencies (through the State Clearinghouse), and from several individuals. Written letters of comment and specific responses are included in Appendix B of the Final EA. This Final EA reflects both verbal and written comments received during the public comment period.

Finding of No Significant Impact

Based on the EA and the results of the formal scoping process and public review of the EA, BLM has concluded the proposed Mother Lode Project will not result in significant impacts to the environment. An environmental impact statement will not be prepared. The major factors used by BLM in determining the Finding of No Significant Impact are summarized below.

The Mother Lode Project would result in impacts to ecological resources in the project area, including wildlife and vegetation. Impacts to human resources would include visual impacts and both beneficial and adverse socioeconomic impacts. The proposed development would occur in a region in which mining is an important and acceptable land use; with the implementation of project alternatives and recommended mitigation measures, projected impacts for the Mother Lode Project are not judged to be significant. Specific impact conclusions for affected resources are summarized below.

The proposed project would meet the standards of BLM regulations governing surface management of public lands under the General Mining Laws (43 CFR 3809). Implementation of the project as described in USNGS' Plan of Operations, including mitigation measures identified in the EA, would not result in undue or unnecessary degradation of public lands.

Air Resources

The proposed project would generate air pollutant emissions and result in increased levels of particulate and other pollutants in the atmosphere around the project. However, projected emissions are predicted to be very small and would meet applicable State of Nevada air quality standards. Air pollutant emissions and control technologies are subject to review and approval by the Nevada Division of Environmental Protection (NDEP); the required permits have been issued by NDEP.

Geology and Mineral Resources

The proposed project would extract economically viable gold reserves. It would not interfere with future resource recovery efforts except in very limited areas. Proposed designs for the mine and other facilities recognize and account for seismic and other geologic hazards in the area.

Water Resources

Water withdrawal for the Mother Lode Project would result in short-term local drawdown in the immediate vicinity of the water supply wells; no impacts are projected to other users or to sensitive resources. No long-term adverse impacts to groundwater quantity or quality are anticipated. The proposed groundwater monitoring program is designed to mitigate potential impacts of groundwater withdrawal.

There are no perennial streams on the project site; no adverse impacts to surface water would occur from the proposed project.

Soils

Construction and operation of the proposed project would disturb approximately 75 acres of soil resources. Loss of soil resources would result from accelerated water and wind erosion and buried suitable topsoil material. Top soiling and revegetation would reduce the long-term impacts associated with soil erosion by increasing revegetation potential and promoting long-term stabilization of treated areas.

Vegetation

Impacts associated with the proposed project would include vegetation removal and loss or reduction of plant productivity. Approximately 75 acres across two vegetation types would be affected by construction activities. The project would result in the loss of approximately 2 AUMs of grazing preference. This would not represent a significant impact to livestock grazing in this area.

Vegetation cover and productivity would gradually be restored on disturbed areas following reclamation and revegetation.

Wildlife

The proposed project would affect local populations of small mammals, songbirds, and reptiles. No major impacts to other wildlife species or regional wildlife populations would be expected.

Approximately 75 acres of wildlife habitat would be impacted resulting in loss of prey species which would affect local populations of area predators and raptors. Habitat would be restored following project abandonment with revegetation of disturbed areas. Impacts of habitat loss to big game species would be minimal. No impacts to federal or state-listed threatened or endangered wildlife species are expected to occur. Crucial habitat for the desert tortoise does not occur in the project region.

Potential impacts to waterfowl and other wildlife species resulting from cyanide poisoning at the heap leach solution ponds is a concern. USNGS has committed to netting and fencing the ponds to mitigate impacts to waterfowl and other wildlife.

Land Use and Recreation

Land Use. The mining and processing operation would be consistent with federal and Nye County land use plans for the area and would be compatible with surrounding land uses. Approximately 2 AUMs of grazing would be lost. This would not be a significant amount. Post-mining land use would return to rangeland/wildlife habitat for the portion of the site excluding the open pit.

The proposed project is located within the Bullfrog Herd Management Area for wild horses and burros. Open water would attract these animals; however, fencing should eliminate potential impacts.

Recreation. The proposed project would not significantly impact dispersed recreation on public lands. The existing use is light, and the region has abundant acreage of public open-space lands.

Aesthetics

Visual Resources. The proposed project would introduce high levels of visual change; however, the visual contrast would not exceed acceptable levels in an area designated for activities which require major modification of the existing visual conditions. The visual effects of the project would be reduced by application of mitigation measures designed to reduce the visual contrast of the Mother Lode mine and waste disposal area.

Noise. The nearest sensitive receptor is over 4 miles from the project site. Noise from general operation of the Mother Lode Project would rarely, if ever, be perceptible at these sensitive receptors.

Socioeconomics

Population. The proposed project (including workers and their families) would increase area population by approximately 93 to 128 people during peak construction activity, by 61 to 85 persons during the overall 1989 construction period, and by more than 125 during project operations. These increases would generate the beneficial and adverse effects described below.

Economy. The proposed project would reinforce the mining industry in Nye County. The project would increase employment in Nye County. Nye County would experience an increase in revenues from property, net proceeds, and sales taxes directly paid by USNGS and indirectly from mine workers who own property and spend their earnings in the local communities. Community facilities and services could improve due to the increased population base, if new revenues are allocated for community facilities such as parks and recreation, library, schools, and road improvements.

Employment. Nye County mining employment would increase moderately, generating minor secondary employment increases in other sectors of the economy. The greatest employment increase would be a total of 89 direct and indirect employees during the peak construction activity during the third quarter of 1989. During operations, 45 permanent workers would be added at the project and an estimated 9 jobs would be created in other sectors.

Fiscal Effects. During the 2- to 3-month construction period, the project would result in short-term, negative net fiscal effects on public service providers faced with an increased demand for services. Over the long term (during operations) increased property tax, sales tax, and net proceeds tax revenues would provide positive net fiscal effects for Beatty and Nye County.

Housing. The proposed project would generate an increase in demand for short-term rental housing during construction that would exceed the available supply in the Beatty area. Over the longer term operations period, USNGS would provide housing for their operations workforce.

Public Facilities and Services. The construction and operations phases of the project would intensify existing water supply and sewage problems in Beatty. A pipeline (which USNGS is providing) and a transmission line are required for the water supply system. An additional rapid infiltration bed, required to meet existing sewer system needs, is projected to begin operation in summer 1989. The capacity of these services must be increased to serve the project-related demand for these services.

The proposed project would increase school enrollment during operations by approximately 67 children in Beatty and exceed capacity in grades 1-8 until new classrooms become available in fall 1989. Service agencies may face short-term increases in demand with no commensurate increase in staff or resources. The Beatty Medical Clinic and the sheriff's department would require additional staff to serve the increased population associated with operations. The demand on the fire department and social services may also require increased staff. USNGS has committed to providing a helipad at the Medical Clinic and a part-time librarian to help offset the impacts on public facilities and services.

Community recreation facilities in Beatty, particularly the ballfields and pool, are already at capacity; therefore, the increased population associated with the proposed project would further affect these resources.

Transportation

Truck traffic to the project would be minimal and would not be expected to affect traffic or road conditions to any measurable degree. The proposed project would increase traffic levels in the site vicinity, particularly during peak hours at shift change times. The resulting traffic levels would be well below highway capacities, however, and would not significantly reduce current levels of service.

Summary of Cumulative Impacts

The BLM conducted a cumulative impact assessment to determine potential impacts associated with the Mother Lode Project and other "reasonably foreseeable future actions" (40 CFR 1508.7). A discussion of the analysis is presented in Chapter 4 of the Draft EA. The assessment identified the following potential cumulative impacts.

Air Resources

No significant cumulative air quality impacts are projected to occur from the Mother Lode Project. Particulate emissions would be highest in the immediate vicinity of each project and would not result in cumulative air quality impacts.

Water Resources

Significant cumulative water resource impacts are not projected for the Mother Lode Project together with other potentially interrelated projects due to the presence of hydrologic boundaries which separate the groundwater source for the Mother Lode Project from the aquifers used to supply water for the other projects. In addition, the estimated radius of the drawdown from groundwater pumping of each of the interrelated projects would not intersect one another.

Operation of the projects would not be expected to cause cumulative water resource impacts to sensitive areas such as the Ash Meadows springs, Devils Hole, local springs in Oasis Valley, springs near the Park Headquarters in Death Valley National Monument, or the Town of Beatty municipal water supply.

Vegetation and Wildlife

No significant cumulative impacts are anticipated to vegetation and wildlife. Vegetation and wildlife habitat loss would be short-term and, with the exception of the open pits, the habitat would be reclaimed following completion of mining activities. Potential adverse impacts of cyanide-laden waters to waterfowl and other wildlife would be mitigated by making these areas unavailable to wildlife, in compliance with Nevada Department of Wildlife permit stipulations.

Land Use and Recreation

Impacts to land use and dispersed recreation on public lands would be site-specific and not interrelated with the Mother Lode Project. There is abundant open-space land available in the region.

Socioeconomics

The increase in population associated with the interrelated projects would result in cumulative socioeconomic impacts in the Beatty area. Short-term adverse fiscal impacts are anticipated due to the immediate need for increased public services prior to the arrival of increased tax revenues.

Housing demand is expected to exceed the available supply of housing during both the construction and operation phases of the interrelated projects. Bond Gold and USNGS would both provide housing for operations employees to help offset these impacts.

Public services and facilities anticipated to be impacted by development of the interrelated projects include:

- Police and fire protection
- Judicial system
- Medical services
- Schools
- Water and sewer system

The financial requirements to meet these increased demands would come from intergovernmental revenues, which would lag behind the service demands, and from voluntary funding or advance financing by the operating companies.

Agency Preferred Alternative

The Agency Preferred Alternative is Alternative 2. This alternative would disturb approximately 75 acres of federal land; approximately 159 acres would be removed from use by livestock and wildlife within the fenced area for the project. The visual impacts would be reduced somewhat compared to the other alternatives by the location of the leach pads and waste dump in an area partially screened from view by Bare Mountain.

The Bureau of Land Management approves the Plan of Operations for the Mother Lode Project with the following list of mitigation measures to prevent undue or unnecessary degradation of federal lands and to provide for reasonable reclamation.

Water Resources

Mitigation Measure WR-1: Characterization of the waste rock and sulfide stockpile is currently underway to determine the potential for acid runoff. If tests indicate a potential problem, then a bed of crushed limestone would be constructed beneath the piles in compliance with Nevada Division of Water Resources stipulations.

Mitigation Measure WR-2: Pump tests have not been conducted in the area to quantify drawdown estimates. In order to verify the estimates and to ensure that if a change occurs it can be identified, a groundwater monitoring system will be implemented. On-site water supply wells will be monitored. An additional well completed by the U.S. Geological Survey in Crater Flat will also be monitored. (e.g., Well USW-VH-1 or USW-VH-2). The monitoring will continue through project operations.

The State Engineer has granted groundwater permits to USNGS, subject to monitoring (see Letter 7 in Appendix B). A groundwater monitoring plan for the Crater Flat basin will be submitted to the State Engineer by September 15, 1989 for approval.

Vegetation

Mitigation Measure V-1: Establishment of noxious weeds in disturbed areas will be monitored during construction and operation. In the event that weeds (e.g., Russian thistle) begin to inundate the project site, BLM will be consulted to determine effective means of control, if deemed necessary.

Mitigation Measure V-2: Final slopes on waste dumps and leach pads will be graded to a slope of 3 horizontal to 1 vertical. Waste dumps will be resoiled prior to revegetation.

Cultural Resources

Mitigation Measure CR-1: Specific cultural resources mitigation will be recommended by the BLM in consultation with the State Historic Preservation Office (SHPO). These measures will become stipulations in the Record of Decision.

Visual Resources

Measure VR-1: To the extent practicable, the shape and form of waste dumps will be designed to repeat natural forms in the area. The project would be less visually obtrusive and would thus generate less impact if natural, curvilinear forms are used in the waste dump by rounding off the "shoulders" of the dump and changing the dump profile from a plateau to an irregular ridge form.

Measure VR-2: Natural colors in the project area will be employed to the extent possible. This should include use of dull, non-reflective paint on structures in colors mimicking those seen naturally in the area but in slightly darker tones.

Measure VR-3: If, as anticipated, the waste rock from the mine contrasts strongly with natural surface and vegetation colors in the vicinity, the final "layer" on the face of the dump should employ darker material approximating dominant natural colors.

Socioeconomics

Measure SE-1: Provision of current project information to local governments is a critical mitigating factor to enable planning agencies to respond effectively to projected changes in demand for housing, public facilities, and services. USNGS should continue to work with Nye County and Beatty and provide county officials with current estimates regarding employment, project startup and completion dates, company housing policies, school-age children, and anticipated recreational needs of the workforce and their families.

Additional Project Commitments

In addition to the previous mitigation measures stipulated by the BLM, USNGS has committed to include the following provisions in their Plan of Operations for the Mother Lode Project.

1. USNGS has committed to blasting during daylight hours to reduce noise impacts during darkness.

2. USNGS has committed to the partial filling of collection ditches to preclude bird access. USNGS has also agreed to increase the height of berms on the collection ditch side of the pads to control spills during heavy precipitation events.

The reclamation plan is considered an integral part of the Plan of Operations; concurrent reclamation is to be incorporated where feasible.

APPENDIX A
ERRATA TO DRAFT EA

The following changes to the Draft EA have been made in response to minor changes in the project design and in response to public comments. The revised text has been underlined to indicate where changes have been made.

Page 1-3, Table 1-1

Fish and Wildlife Service, add Compliance with Migratory Bird Treaty Act

Page 2-6, Section 2.1.4, Fourth Paragraph

Change to read: Gabbs, approximately 160 miles northwest of the Mother Lode Project, was selected as representative because of similarities between it and the project site in terrain, elevation, and population.

Change to read: On the other hand, Lehman Caves, approximately 200 miles northeast of the Mother Lode Project, is in an area relatively unaffected by industrial or urban pollution sources.

Page 2-12, Third Paragraph

Change to read: ... Devils Hole to Lathrop Wells. East and west of the fault the western boundary of the Ash Meadows flow system ... (Sharp 1989; see also Figure 1 of Appendix A).

Page 2-12, Section 2.3.1.2., First Paragraph

Change to read: ... a portion of the water supply could be developed here. Depth to groundwater in the project area is approximately 200 feet. Farther east in Crater Flat, alluvial material and volcanics were found to total depth (approximately 1,540 feet) which have water bearing potential. In Crater Flat, groundwater was encountered at approximately 700 feet.

Page 2-12, Fifth Paragraph

Change to read: Based on Czarnecki and Waddell (1984), the transmissivity of the geologic materials in Crater Flat is approximately 7,500 gallons per day per foot, ... (Sharp 1989; see also the Water Resources Technical Memorandum in Appendix A).

Page 2-13, Second Paragraph

Change to read: The closest private well to the project site in Crater Flat (Permit 48436) is located approximately 8 miles to the southeast.

Page 3-2, Table 3-1

Change to read: Crushers and Screens TSP = 864 lb/day
PM-10 = 212 lb/day

Page 3-3, First Line

Change "95" percent to "85" percent.

Page 3-4, Second Paragraph

Change "19" micrograms to "44" micrograms.

Change "1 microgram" to "less than 1"; delete "and 0.1 microgram per cubic meter."

Page 3-5, Table 3-2

Change to read:

Maximum Impact Point	USNGS Impact	Total Impact
Particulate Annual	5.1	10
Particulate 24-hour	44.2	52
Beatty Town Center		
Particulate Annual	0.02	5
Particulate 24-hour	0.27	10

Page 3-16, First Paragraph

Reference to Section 3.12.4 should be changed to "Section 1.4.2.1 on page 1-14 of Draft EA."

Page 3-16, Last Paragraph, Last Sentence

Change to read: ... with the concurrence of the State Historic Preservation Office, determined National Register eligibility.

Page 3-17, First Paragraph

Change to read: Ten prehistoric lithic scatters, although not eligible for National Register of Historic Places (NRHP) nomination on their own merit, demonstrate eligibility as a district. These sites all contain an abundance of ... streamside environments.

Delete: Additional survey and evaluation of these sites is necessary prior to a final determination of eligibility.

Page 3-17, Second Paragraph

Delete entire paragraph.

Insert: Three prehistoric quarry sites are also eligible for NRHP nomination.

Page 3-17, Third Paragraph

Delete: Once NRHP eligibility ... pursued.

Insert: Effects to these properties are currently being determined by the BLM in consultation with the SHPO, and suitable mitigation options, if necessary, will be pursued. The BLM will address cultural resource impacts and associated mitigation in the Record of Decision.

Page 4-4, First Paragraph

Change to read: ... studies conducted for the proposed repository (PIC 1988) estimate that approximately 18 workers would reside in the Beatty and Amargosa Valley area."

Page 4-7, Fourth Paragraph

Change to read: ...in the northern Amargosa Desert with a static elevation of approximately 2,600 feet above sea level (BLM 1988). The Mother Lode Project would produce water from an aquifer with a static elevation of approximately 3,250 feet above sea level from interbedded alluvial and volcanic materials in Crater Flat (Hydro-Search Inc. 1989)

Page 4-8, Second Paragraph

Change to read: The Oasis Valley/Fortymile Canyon groundwater system is indirectly connected to the Amargosa Desert flow system through Oasis Valley and ultimately the Amargosa Narrows near Beatty (see Appendix A, Figure 1) and farther south and west ... Malmberg and Eakin 1962).

Page 4-9, Second Paragraph

Change to read: ... groundwater is generally moving from north to south. Sarcobatus Flat is a closed basin in that surface drainage leads to a playa. Groundwater in Sarcobatus Flat flows west toward Death Valley (Malmberg and Eakin 1962).

Page 4-10, Second Paragraph

Change to read: ...amount of pumping involved in this mine project and the long distance to sensitive areas, ...are not anticipated.

Page 4-10, Fourth Paragraph

Change to read: ...alluvial valley-fill aquifers utilized by the mines. Beatty currently utilizes wells completed in volcanic rocks of the Bullfrog Hills for its water supply. Additional wells in the alluvium of Oasis Valley also contribute to the town's overall groundwater resources. Neither of these two sources is impacted by the existing or proposed mines. Areas such as the Amargosa Farm area ... existing and proposed mines.

Page 4-11, First Paragraph

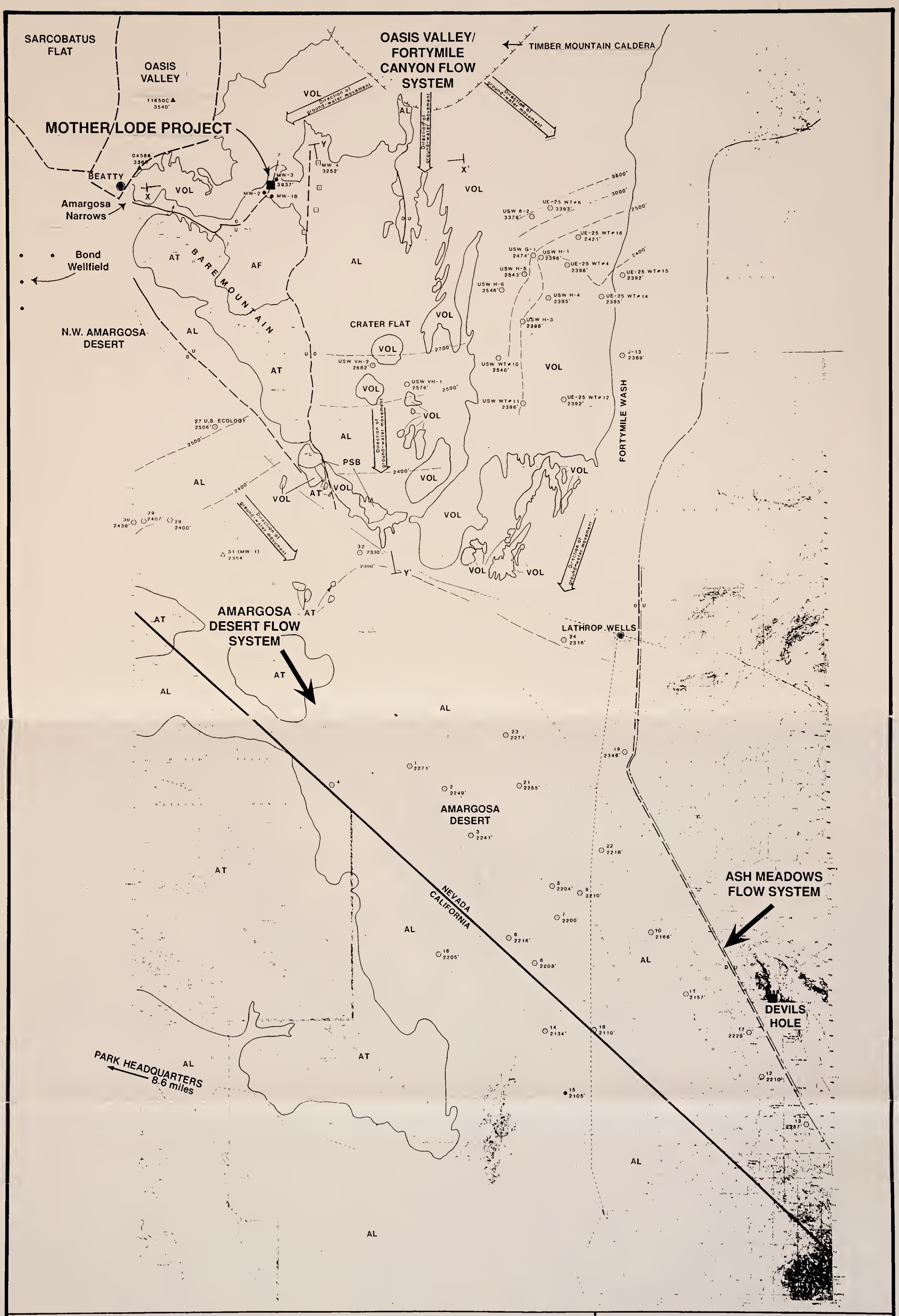
Change to read: The Yucca Mountain project is expected to use about 350 acre-feet of water per year over a 60-year project (DOE 1986). During the initial 6-year site characterization phase the project is expected to use approximately 21 acre-feet of water per year (DOE 1988). According to impact analyses... (DOE 1986).

Page 4-26, Third Paragraph

Change to read: 2) Bond has drilled one new municipal water well which produces approximately 200 gpm of good quality water.

Page R-5

Add: U.S Department of Energy (DOE), 1988. Site Characterization Plan, Yucca Mountain Site, Nevada Research and Development Area, Nevada.



MOTHER LODE PROJECT

APPENDIX A - FIGURE 1
HYDROGEOLOGIC MAP OF THE CRATER FLAT AREA AND VICINITY
Source: Hydro-Search, Inc. 1989

APPENDIX B
COMMENTS ON DRAFT EA

DRAFT EA COMMENTS AND RESPONSES

The BLM received 12 written comment letters on the Draft EA. The comment letters were from:

1. Desert Survivors
2. U.S. Department of the Interior, National Park Service
3. U.S. Department of the Interior, Fish and Wildlife Service
4. George and LaRene Younghans
5. Nevada State Clearinghouse
6. Nevada Division of Historic Preservation
7. Nevada Division of Water Resources
8. Nevada State Fire Marshal's Office
9. Nevada Department of Wildlife
10. Nevada Division of Environmental Protection
11. Nevada Division of Conservation Districts
12. Nevada Department of Minerals

Letter 1

Law Offices
ORRICK, HERRINGTON & SUTCLIFFE
Suite 3000
333 South Hope Street
Los Angeles, California 90071
Telephone (213) 680-7000
Telecopier (213) 680-4400

San Francisco, California 94111
600 Montgomery Street
Telephone (415) 392-1122

New York, New York 10022
599 Lexington Avenue
Telephone (212) 326-8800

Sacramento, California 95814
555 Capitol Mall
Telephone (916) 447-9200

Writer's Direct Dial Number

June 7, 1989

Mr. Theodore Angle
Area Manager
Bureau of Land Management
Tonopah Resource Area
P.O. Box 911
Tonopah, NV 89049

Re: Draft EA for Mother Lode Project

Desert Survivors submits the following comments to the Draft Environmental Assessment for the proposed Mother Lode Project (May, 1989).

The Draft EA fails to address the significant aspects of our January 24, 1989 letter, and is wholly inadequate as an environmental review document for this project.

First, we pointed out that the evaluation of alternatives was suffering from serious misconceptions, and that analyzing alternative project facility locations is simply not enough. The Draft EA fails to remedy this glaring defect in the environmental analysis for the project. At a minimum the Final EA must consider in detail, including a breakdown of costs and benefits, water-saving alternatives to the proposed operations and the visual impact alternative of backfilling the open pit.

1 - 1 Second, we pointed out that a thorough, independent analysis of water resource impacts is necessary here, including (1) a detailed description of each proposed use of water and an estimate for the water needs of each proposed use, (2) an analysis of alternatives to each proposed use of water, (3) a precise description of the water source or sources to be utilized, (4) a plan showing the design,

Response to Letter 1

1 - 1 The proposed project is designed to use a minimum amount of water; therefore, an analysis of water conservation alternatives was not deemed necessary. A cost benefit analysis is not part of the decision criteria; therefore, this type of analysis was not included in the EA.

An alternative of backfilling the open pit was discussed in Section 1.5 of the Draft EA. An additional reason for not backfilling the pit is to preserve evidence of mineralization in accordance with surface management regulations [43 CFR 3809.1-5(c)(5)]. Please refer to the response to comment 11-2 for additional discussion of backfilling.

An independent assessment of water resource impacts was conducted by ENSR Consulting and Engineering under the direction of the BLM. Please refer to the responses to the National Park Service comment letter (Letter 2) for additional discussion of the groundwater impact assessment.

Letter 1 Continued

ORRICK, HERRINGTON & SUTCLIFFE

Mr. Theodore Angle
June 7, 1989
Page Two

1 - 1 location, pumping capacity, etc. of any wells or other proposed facilities, (5) an independent evaluation in conjunction with National Park Service, Environmental Protection Agency, Fish and Wildlife Service and the public of the impacts of the proposed water use.

1 - 2 The water resource information provided in the Draft EA fails to address those concerns. Perhaps the most noticeable omission is the failure to offer any data to support the estimates of water requirements for the project or to analyze alternative water sources. This must be addressed in the Final EA.

1 - 3 We must again emphasize that the sensitivity of this project assures that an Environmental Impact Statement is required.

Very truly yours,

W. Douglas Kari

WDK:de
1623k

Response to Letter 1 Continued

1 - 2 We have evaluated your comment and have provided the following information. USNGS estimates the water consumption by use for the Mother Lode Project to be:

Use	Water Requirement (gallons per day)
Dust control	150,000
Ore agglomeration	97,239
Lab and processing	6,348
Pond and heap evaporation	95,297
Miscellaneous, non-recyclable water	675
Total	349,559

This total equals approximately 243 gallons per minute.

1 - 3 As indicated in the Summary to this Final EA, the BLM has concluded the proposed Mother Lode Project will not result in significant impacts to the human environment; therefore, an environmental impact statement is not required.

Letter 2

United States Department of the Interior
NATIONAL PARK SERVICE
DEATH VALLEY NATIONAL MONUMENT
DEATH VALLEY, CALIFORNIA 92328

IN REPLY REFER TO:

L3023/L54

JUN 1 1989
BUREAU OF

June 9, 1989

Mr. Theodore Angle
Area Manager
Bureau of Land Management
P.O. Box 911
Tonopah, NV 89049

Dear Ted:

The National Park Service (NPS) wishes to thank you for the opportunity to review and comment on the draft environmental assessment for the proposed Mother Lode mine near Beatty, Nevada. The BLM, ENSR, and USNGS are to be complimented on the adequacy of the document. However, during our review of the document we have noted several points that require comment. Specifically, our comments pertain to the observations and conclusions drawn in the analysis of water resources.

As you are aware, the NPS is concerned over the status and trend of ground water resources in the region. It is obvious there is not full agreement between traditional and senior ground water users and the rash of recent, junior applicants over the nature of the Amargosa Desert ground water resources. The regional ground water systems which provide water for Ash Meadows, Devils Hole, and Death Valley are an extensive, complex, three dimensional network which is less than adequately understood. The acceptance of simplified or conveniently compartmentalized interpretations which obviously support junior water applicants could result in irreversible damage to the system. As a sister Federal land management agency we trust you will recognize and join our deep concern in this matter. **2 - 1**

The significance of the issue can be seen in the fact, as noted in the EA, the area lies within one of the most arid regions of Nevada and California. The area is undergoing a well documented long term drying trend which has resulted in the continued fall of the local ground water tables, lengthening of flow paths, and

Response to Letter 2

2 - 1 Recognition of the complexity of the groundwater system has been central to the hydrologic impact analysis. A hydrologic monitoring program has been stipulated in the Draft Environmental Assessment and is conditional to the issuance of water rights permits by the State Engineer (see Letter 7). This monitoring is designed to detect potential regional impacts. In addition, local impact has been simulated in order to address the need for information on anticipated drawdown. The magnitude of the Mother Lode Project water supply requirement (250 gpm for approximately 7 years) does not result in significant drawdown, thus monitoring appears to be an appropriate approach to address the issue of regional groundwater impacts.

Letter 2 Continued

increasing of flow rates. In this regard, it is clear the preparers of the EA have recognized the local aquifer systems do receive recharge from a vast area of Nevada. In that role the local aquifers are essential in maintaining the Ash Meadows and Death Valley ecosystems, as well as the area's domestic and commercial users.

The EA notes that the recharge area incorporates at least 10 intermontane valleys. Those valleys include Railroad valley which extends at least to Mt. Hamilton in the White Pine Range, and Hot Creek and Stone Cabin Valleys which obtain recharge from the Toquima, Monitor, and Hot Creek ranges. It is further noted that as much as 35 percent of the water the Ash Meadows ecosystem is dependent upon waters derived from Pahranagat Valley via the Pahranagat Shear zone.

Pahranagat Valley is part of the White River Groundwater Flow System of Eastern Nevada. The White River flow system begins in Ruby Valley at the base of the Ruby Mountains. Thus, the Ash Meadows/Death Valley area is dependent upon a recharge area constituting 1/3 to nearly 1/2 of the State of Nevada. The waters upon which these critical management areas depend are carried to them from long distances (often over 100 miles).

2 - 2 Preparers of the EA have conveniently noted inferred aquatards to support an alleged separation or partitioning of Crater Flats from other groundwater flow systems of the area. We are not aware of data which supports such an assertion. Bare Mountain, purported to constitute such an aquatard, hosts both upper Proterozoic and lower Paleozoic strata. While less transmissive Cambrian clastic units, typified as constituting an aquatard, are indeed present in Bare Mt., so are carbonate units having the highest measured transmissivity characteristics in the region. The characterization of Bare Mt. as a aquatard unit is, at best, argumentative.

2 - 3 Preparers of the EA appear to have assumed that the majority, if not all, faults act as aquatards constricting or impeding the local movement of groundwater. NPS reviewers are of the opinion that, generally, fault zones more often generate brecciation of the wall rocks and, to a lesser degree, develop clay or gouge. Brecciated rock provide zones of enhanced water flow and, as such, are generally sought as superior well locations. The mere presence of a mapped (often inferred) fault is then not accepted as a convenient aquatard.

2 - 4 In the case of the Stewart Valley fault (shown unnamed in appendix A figure 1) separating Ash Meadows and Devils Hole from the Amargosa Desert, we question its alleged function as an aquatard.

Response to Letter 2 Continued

2 - 2 The consideration of Bare Mountain or other areas in the region as aquatards is based on general principles of fluid movement and best available geologic/hydrologic data. When site-specific data are not available, indirect evidence must be relied upon for evaluation. In the case of Bare Mountain, water chemistry and water level elevation differences between Crater Flat and the northwestern Amargosa Desert and USNGS water and mineral drilling data indicate that a discontinuity exists. That is not meant to suggest that some water may not move through Bare Mountain or that groundwater moving north to south through Crater Flat is isolated from the regional flow system. However, flow will occur along paths of least resistance, and aquatards do represent areas of minimum transmission.

2 - 3 We concur with the position that faults should not be categorically considered hydrologic boundaries. Structural and stratigraphic data must be taken into account with each situation. In the case of the structural feature separating Ash Meadows from the Amargosa Desert, Paleozoic carbonate rocks are juxtaposed against Quaternary and Tertiary sedimentary units of low permeability (Winograd and Thordarson 1975), resulting in a restriction to flow.

2 - 4 According to Dudley and Larson (1976), the wells which caused the drawdown at Devils Hole (and triggered the U.S. Federal court ruling in U.S. vs. Cappaert, 426 U.S. 128 (1976) establishing federal water rights at Devils Hole) were on the east side of the spring line defining the hydrologic boundary at Ash Meadows. Dudley and Larson (1976) conclude that: "There is no evidence at the present time that withdrawals of groundwater west of the spring line would produce drawdown in the Paleozoic carbonate rocks nor diminish the flow of major springs."

Letter 2 Continued

2 - 4 Elevated levels of groundwater pumping west of the inferred fault in the early 1970's resulted in the lowering of the water table to the east. The event clearly established hydrologic communication across the fault. The event led to the Federal Court ruling, resulting from the US·v. Cappaert, 426 U.S. 128 (1976), establishing federal water rights at the Devils Hole detached unit of Death Valley National Monument.

2 - 5 The EA contains repeated statements that lead the reader to believe that sufficient local groundwater recharge occurs to provide adequate water for needs of the region. Our research indicates conflicting data exists. Nichols (1986) determined from a 16 year study from 1961 to 1976 near Beatty, Nevada, that 97 percent of annual rainfall was lost due to evaporation. He further stated that the high evaporation rate may have allowed for only three recharge events during the 16 year period. Classen (1985) suggests that the last recharge to the valley-fill aquifer in the west-central Amargosa Desert, based on hydrochemical data, resulted primarily from overland snow-melt during late Pleistocene time. Thus, there is no present effective local recharge of the ground water aquifers.

Recent studies conducted in support of the site characterization work at the proposed National High Level Nuclear Waste Repository at Yucca Mt. (on the east side of Crater Flats) support those observations. Data from current studies presented in the site characterization plan for Yucca Mt. indicate there is no recharge of groundwater from rainfall. Artificial rainfall tests performed by the Desert Research Institute (DRI) during the Yucca Mt. studies revealed that normal rainfall penetrates to only approximately one meter in porous soil. The rainfall is lost through evaporation as the result of plant root, diurnal and barometric pumping (personnel communication Mr. John Fordham, DRI).

The documentation of effective zero recharge for the Amargosa Desert area is reflected in the analysis for the low level nuclear waste site near Beatty, Nevada. In its permitting process of the site, the State of Nevada accepted data from the applicant supporting zero local recharge of the aquifer systems of the area.

The NPS believes that zero recharge conditions prevail over a wide area. The nearest area of any recharge is Timber Mt. which is inadequately studied and contains insufficient surface area to provide water for all the demands placed upon the groundwater systems in the Beatty/Amargosa/Ash Meadows/Death Valley area. The same argument applies to the Kawich Peak area, leaving the area dependent upon substantive ground water recharge from

Response to Letter 2 Continued

2 - 5 Local recharge is and has been recognized to be a minor component to the groundwater system in the vicinity of the Mother Lode Project. As in much of southern Nevada, however, the regional movement of groundwater does result in recharge to the groundwater system from distant highlands. The movement of groundwater in Crater Flat is from north to south indicating the area receives recharge from the Timber Mountain area. Other critical areas of concern receive recharge from additional distant highlands and thus are not necessarily subject to impact along different flow paths of the regional movement of groundwater. This is not meant to deemphasize the potential impact to any critical areas as a result of groundwater development, but similarly, development at the Mother Lode Project does not necessarily impact areas believed to be recharged from other areas. The proposed monitoring program incorporates wells to the south and downgradient of the project to allow documentation of potential impact. The Nevada State Engineer has the authority to regulate and restrict groundwater use based on evaluation of monitoring results.

Letter 2 Continued

central and north-eastern Nevada.

Waters derived from those effective recharge areas must be transported long distances in the aquifer systems. Those waters are subject to unquantified diversion, evaporative losses, and local retention. The volume of water remaining at the traditional discharge points (ie. Ash Meadows/Death Valley) is obviously in delicate balance (see US v. Cappaert). The region is continuing to dry, resulting in further lowering of water tables and even greater lengthening of flow paths. It is intuitively evident that the Amargosa Desert is an area of critical ground water balance which must be carefully managed.

2 - 6 The assessment of water needs in Death Valley National Monument is limited to local domestic demands in the Furnace Creek area. Such a narrow assessment does considerable injustice to one of the nation's largest and most complex park units. Water requirements in Death Valley extend well beyond the domestic needs of its employees and visitors. Ground water dependent oases and riparian areas are an integral part of the Monument and are essential to the long term maintenance of the nationally outstanding features for which it was set aside, including unique flora and fauna, such as the Devils's Hole pupfish and bighorn sheep.

2 - 7 The NPS does not assume a position to impede economic development. However, it does wish to elevate sensitivity and formulate policies which result in the full evaluation of factors influencing the environment. It cannot be unequivocally stated that ground water pumping by proposed mining operations at the Mother Lode mine will adversely effect the ground water balance. Neither can it be stated that it will not, particularly when the cumulative effects of all regional ground water pumping must be considered. Steps must be taken now, before irreversible damage could occur, to insure the adequate balance of all the area's water needs with available ground water.

The National Park Service recommends that any approval of the Mother Lode mine proposed plan of operations be conditioned on a ground water monitoring program designed to detect adverse impacts long before they can irreversibly impact the environment. In the event of early detection of unpredicted and unacceptable impact to the aquifer systems, pumping operations must be suspended. The precedent for such a program exists as exhibited in the water permit issued by the State of Nevada for the Bond Gold mining operations at Beatty, Nevada. A similar program is appropriate for the Mother Lode mine.

If we can be of any further assistance please feel free to

Response to Letter 2 Continued

2 - 6 The NPS concern for maintaining adequate water to support flora and fauna of the Monument in addition to the domestic needs is shared by the BLM and USNGS. The Draft EA addresses this concern on pages 2-12, 3-9, 4-10, A-13, A-14, A-17, and A-18.

2 - 7 USNGS, BLM, and the Nevada State Engineer's office concur with the concept of monitoring groundwater development at the Mother Lode Project. A proposed program was outlined in the Draft Environmental Assessment, and a similar program is being submitted to the Nevada State Engineer for approval.

Letter 2 Continued

contact us at any time. I would like to confirm the receipt of your letter requesting we send you copies of water monitoring data acquired under the Bond Gold monitoring plan. As soon as data are obtained we will send them to you in order for you to be able to fulfill your coordination needs with the U.S. Fish and Wildlife Service.

Sincerely,

Edwin L. Rothfuss
Superintendent

cc: Owen Williams, WRD
Jim Huddlestun, WR
David Brown, USFWS
Peter Morros, State Engineer
Nobby Reidy, Wilderness Society
Dane Floum, Sierra Club Legal Defense Fund

Letter 3

United States Department of the Interior

FISH AND WILDLIFE SERVICE

RENO FIELD STATION
4600 Kietzke Lane, Building C
Reno, Nevada 89502

June 12, 1989
File # BLM-5

JUN 1 5 1989

MEMORANDUM

To: Area Manager, Tonopah Resource Area, Bureau of Land Management, Las Vegas, Nevada

From: Field Supervisor, Reno, Nevada

Subject: Draft Environmental Assessment Proposed Mother Lode Project

The Fish and Wildlife Service (Service) has reviewed the subject document, which describes plans to develop a heap leach gold mining operation on approximately 75 acres of a 250 acre site east of Beatty, NV. We offer the following specific comments:

Section 1.2 Table 1.1

3 - 1 The Service also requires compliance with the Migratory Bird Treaty Act, 16 U.S.C. 701-718h, which provides protection for most species of wild birds in the United States and virtually all species of birds which could be expected to be found at the project site.

Section 1.4.2

3 - 2 We suggest that conveyers be used to place ore on the heaps, this will help to improve percolation by reducing compaction that occurs when using trucks.

3 - 3 Also, we recommend that a drip system be used rather than sprinklers. Both of these methods will help to reduce or eliminate the potential for ponding of solution, thus reducing possible exposure to wildlife. Additionally, these measures will reduce evaporation, thereby helping to reduce water needs.

3 - 4 We also suggest that all collection ditches be partially filled with gravel, this will preclude any bird access while again, lessening evaporation. To facilitate flow of solution a perforated plastic pipe is placed beneath the gravel. A higher berm may also be needed to control spills during unusual precipitation events.

3 - 5 It is stated in the plan that solution ponds will be covered with a plastic mesh screen to prevent bird access. While the Service supports netting of all solution ponds, we suggest that the applicant investigate technology that eliminates pregnant and barren solution ponds with only an emergency holding pond being exposed. If solution ponds appear unavoidable we recommend that ponds be deeply excavated to reduce the surface area, this will aid in netting while, again, reducing evaporation. (The Nevada State Engineer's Office issues dam permits which are needed for impoundments of greater than ten acre feet of liquid. It is our understanding that these permits are not difficult to obtain).

Response to Letter 3

3 - 1 Compliance with the Migratory Bird Treaty Act has been added to Table 1-2; please see Appendix A, Errata.

3 - 2 Geotechnical studies to date indicate truck dumping would not seriously affect percolation. Proposed agglomeration of the ore will significantly increase percolation rates.

3 - 3 Drip irrigation is included in the proposed design; please refer to Section 1.4.2 of the Draft EA.

3 - 4 USNGS will partially fill collection ditches with gravel to prevent bird access and will increase the berm height on the collection ditch side of the leach pads.

3 - 5 USNGS has designed the ponds to provide minimum evaporation while enabling effective operation of the pump suction lines.

Letter 3 Continued

Section 1.4.5

3 - 6 The reclamation plan should include goals of the revegetation effort and means that would be implemented to correct any failures of initial efforts. Furthermore, to insure that revegetation and reclamation goals are met, we request that bonding be made a requirement of the operation permit. The reclamation section also mentions that seeds used in the revegetation effort will be BLM approved. The Service would like to remind BLM that Executive Order 11987 (May 27, 1977) requires that Federal agencies shall restrict, to the extent permitted by law, the introduction of exotic species into the lands or waters which they own, lease or hold for purposes of administration, and encourage the States, local governments, and private citizens to do the same.

3 - 7 We further recommend that where cacti and Joshua trees are to be disturbed, that they be saved and transplanted in previously disturbed areas and/or cleared zones around water wells. Transplantation of larger Joshua trees will help to replace lost habitat values quicker than revegetation due to the slow growth rate of most desert species.

We thank you for the opportunity to comment on the subject report. Should you have any questions or require additional information, please contact Bob Hallock at 702-784-5227.

Richard Y Navarre

Response to Letter 3 Continued

3 - 6 The BLM concurs that a plant cover goal is desirable. The BLM Authorized Officer will determine when reclamation is complete and what measures are necessary in order to correct any failures. The goal of the reclamation operation is 70 percent of the mean total plant cover as detailed in Table 2-8 of the Draft EA.

Bonding is discretionary based upon factors such as a record of non-compliance by a mining company, acreage to be disturbed, or the sensitivity of resources in the area. It is the BLM's position that the good record of this company and the small number of acres to be disturbed do not require a bond.

The BLM is aware of its responsibilities under Executive Order 11987. Seed mixes will be developed to restrict the introduction of exotic species.

3 - 7 Transplanting of cacti and Joshua trees will be considered in the future. However, opportunities do not exist in this case for transplanting. The cleared zones around water wells are undesirable locations for transplanting due to vehicular traffic.

Letter 4

JUN 16 1989

[illegible]

June 14, 1989

Bureau of Land Management
Tonopah Resource Area
Tonopah, Nv.

Ted Angle, Area Manager

RE: Draft Enviromental assessment, Proposed Mother LOde Project.

Dear Mr. Angle,

4 - 1 We feel the USNGS should be made to follow all of the mitigation measures as specified in Appendix A, Para. 4.2. In addition we are requesting USNGS monitor one of our wells as the well "to the north of the project site".
Also because of the uncertainity of the draw down cone we are requesting USNGS monitor the discharge of Long Springs which is also North of the project site.
If in the future the level of surface water in the wells being monitored or the discharge of Long Springs is effected, USNGS should be made to cease and desist pumping water.

P.O. Box 833
Beatty, Nv.

Response to Letter 4

4 - 1 USNGS will comply with the groundwater monitoring requirements of the State Engineer. The monitoring plan will be developed by USNGS and the State Engineer to incorporate any special conditions stipulated in the water permits. Your request will be considered in the development of this plan.

Letter 5

STATE OF NEVADA

BOB MILLER
Acting Governor

JEAN FORD
Director

OFFICE OF THE GOVERNOR
OFFICE OF COMMUNITY SERVICES
Capitol Complex
Carson City, Nevada 89710
(702) 885-5187

June 16, 1989

Mr. Theodore Angle
Area Manager
Bureau of Land Management
P.O. Box 911
Building 102 Military Circle
Tonopah, Nevada 89049

Re: SAI NV #89300051 Project: E.A. - Mother Lode Gold Mine in Nye County

Dear Mr. Angle:

Attached are the comments from the Nevada Department of Wildlife and the Divisions of Conservation Districts, Environmental Protection, Historic Preservation/Archeology and Water Resources and the State Fire Marshal's Office concerning the above referenced project.

Several of the above mentioned agencies have raised specific concerns that need to be addressed prior to the Bureau of Land Management's final decision on this project. In those circumstances where BLM, the project proponent or the contractor will be corresponding with State agencies, the State Clearinghouse would appreciate copies of such correspondence.

We do commend the ENSR Consulting and Engineering firm on the Draft Environmental Assessment for this project. We were particularly impressed with Section 4.0 -- Cumulative Impact Assessment. After months of requesting various BLM districts to implement cumulative impact analysis, it is reassuring to see that such an analysis can be accomplished in an open and honest manner.

Response to Letter 5

Thank you for your comment.

Letter 5 Continued

Mr. Theodore Angle
June 16, 1989
Page 2

These comments constitute the State Clearinghouse review of this proposal as per Executive Order 12372. Please address these comments or concerns in your final decision.

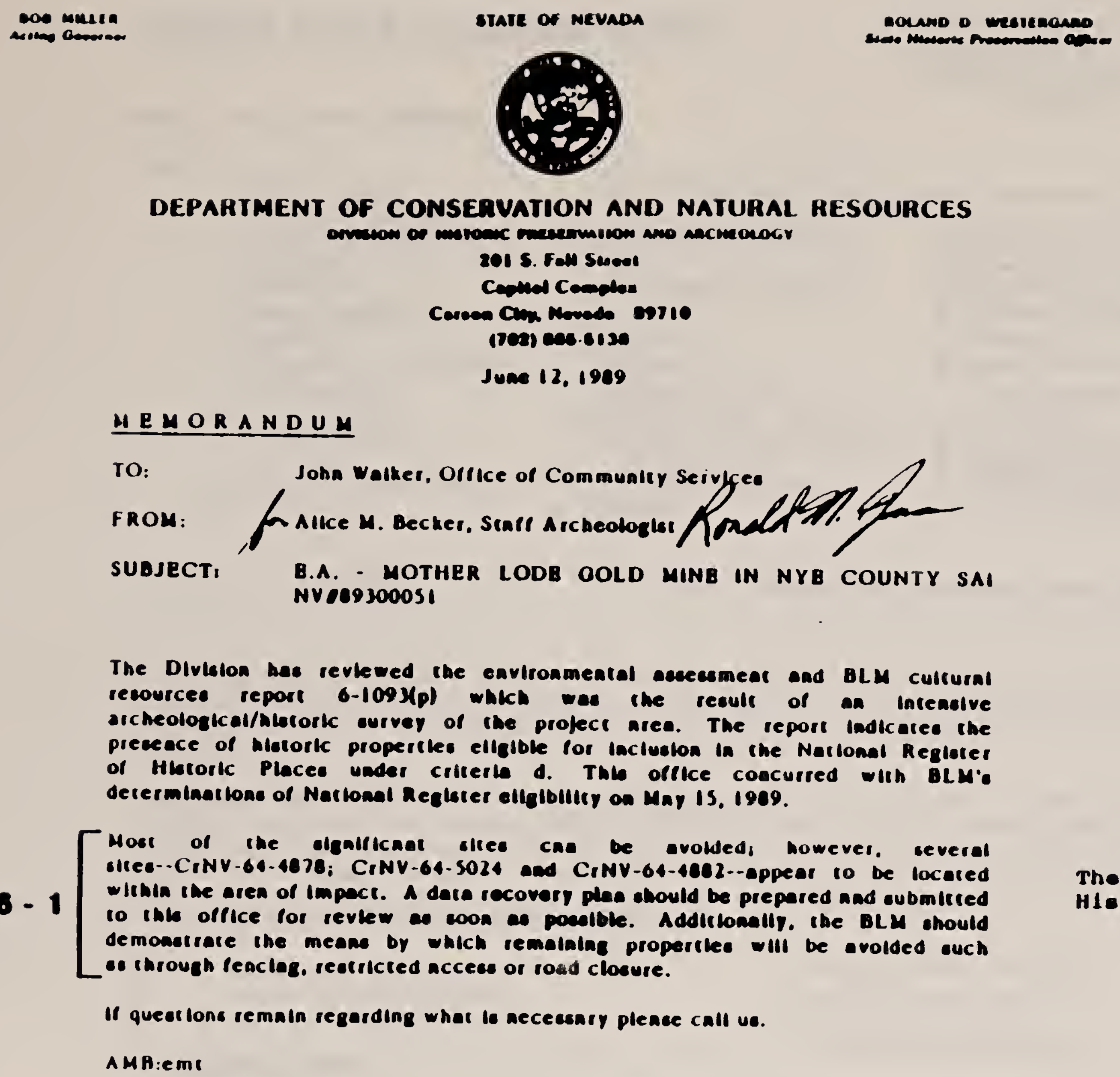
Sincerely,

B. Walker

John B. Walker, Coordinator
State Clearinghouse, NOCS/SPOC

JBW/11
Enclosures
cc: Commenting State Agencies
Ed Spang, BLM-State Office
ENSR Consulting & Engineering

Letter 6



BOB MILLER
Acting Governor

STATE OF NEVADA

ROLAND D. WESTERGARD
State Historic Preservation Officer

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF HISTORIC PRESERVATION AND ARCHEOLOGY
201 S. Fall Street
Capitol Complex
Carson City, Nevada 89710
(702) 885-5138

June 12, 1989

MEMORANDUM

TO: John Walker, Office of Community Services

FROM: for Alice M. Becker, Staff Archeologist Ronald M.

SUBJECT: E.A. - MOTHER LODE GOLD MINE IN NYE COUNTY SAI NV#89300051

The Division has reviewed the environmental assessment and BLM cultural resources report 6-1093(p) which was the result of an intensive archeological/historic survey of the project area. The report indicates the presence of historic properties eligible for inclusion in the National Register of Historic Places under criteria d. This office concurred with BLM's determinations of National Register eligibility on May 15, 1989.

6 - 1 Most of the significant sites can be avoided; however, several sites--CrNV-64-4878; CrNV-64-5024 and CrNV-64-4882--appear to be located within the area of impact. A data recovery plan should be prepared and submitted to this office for review as soon as possible. Additionally, the BLM should demonstrate the means by which remaining properties will be avoided such as through fencing, restricted access or road closure.

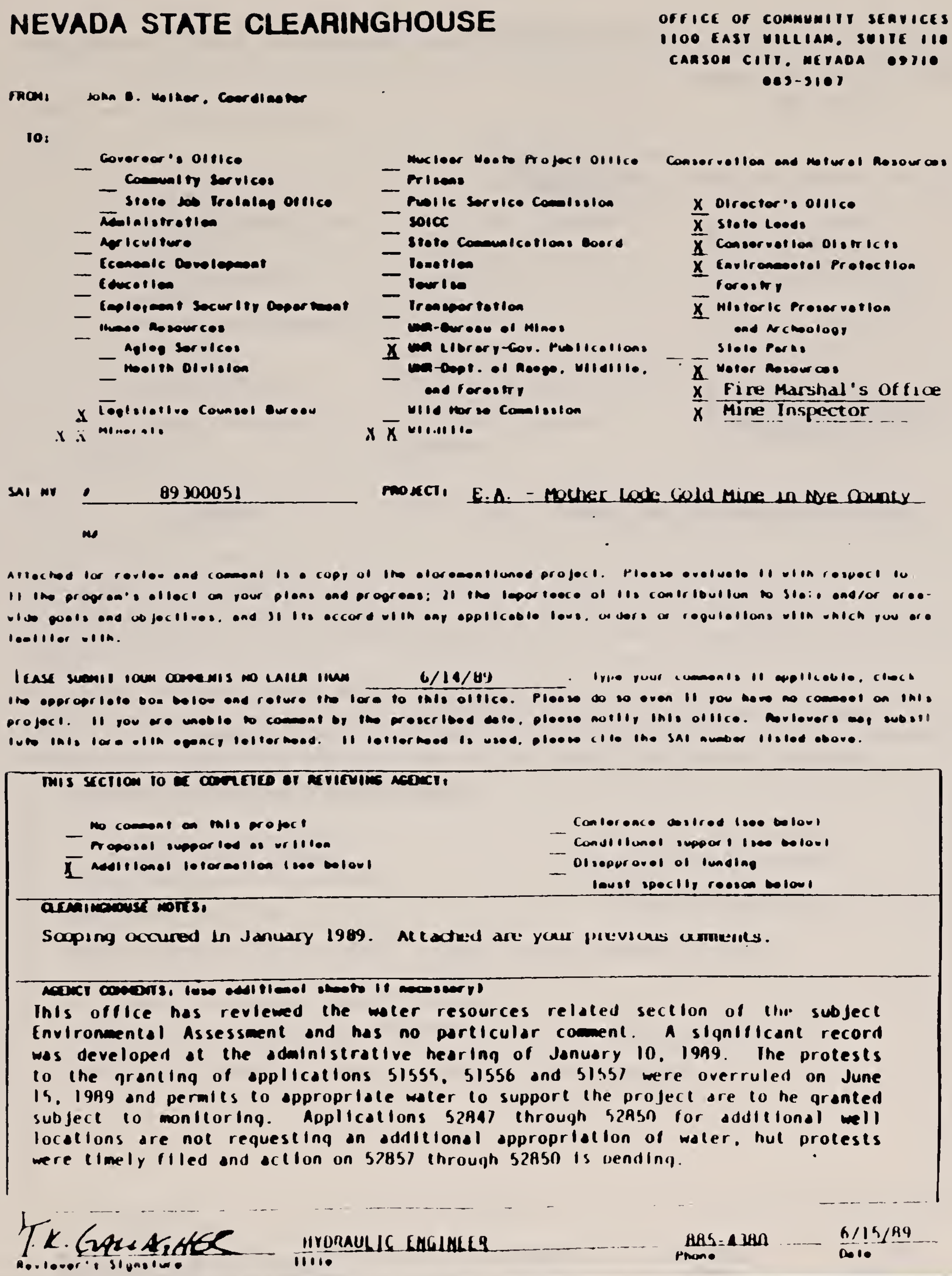
If questions remain regarding what is necessary please call us.

AMB:emt

Response to Letter 6

The Bureau of Land Management has recommended mitigation to the State Historic Preservation Officer in a letter dated July 13, 1989.

Letter 7



NEVADA STATE CLEARINGHOUSE

OFFICE OF COMMUNITY SERVICES
1100 EAST WILLIAM, SUITE 118
CARSON CITY, NEVADA 89710
885-5107

FROM: John B. Walker, Coordinator

TO:

- ☐ Governor's Office
  - ☐ Community Services
  - ☐ State Job Training Office
- ☐ Administration
- ☐ Agriculture
- ☐ Economic Development
- ☐ Education
- ☐ Employment Security Department
- ☐ Human Resources
  - ☐ Aging Services
  - ☐ Health Division
  - ☐
- ☒ Legislative Counsel Bureau
- X ☒ Minerals

- ☐ Nuclear Waste Project Office
- ☐ Prisons
- ☐ Public Service Commission
- ☐ SOICC
- ☐ State Communications Board
- ☐ Taxation
- ☐ Tourism
- ☐ Transportation
- ☐ UNR-Bureau of Mines
- ☒ UNR Library-Gov. Publications
- ☐ UNR-Dept. of Range, Wildlife, and Forestry
- ☐ Wild Horse Commission
- X ☒ Wildlife

Conservation and Natural Resources

- ☒ Director's Office
- ☒ State Lands
- ☒ Conservation Districts
- ☒ Environmental Protection
- ☐ Forestry
- ☒ Historic Preservation and Archeology
- ☐ State Parks
- ☒ Water Resources
- ☒ Fire Marshal's Office
- ☒ Mine Inspector

SAI NV # 89300051 PROJECT: E.A. - Mother Lode Gold Mine in Nye County

NA

Attached for review and comment is a copy of the aforementioned project. Please evaluate it with respect to 1) the program's effect on your plans and programs; 2) the importance of its contribution to State and/or area-wide goals and objectives, and 3) its accord with any applicable laws, orders or regulations with which you are familiar with.

PLEASE SUBMIT YOUR COMMENTS NO LATER THAN 6/14/89. Type your comments if applicable, check the appropriate box below and return the form to this office. Please do so even if you have no comment on this project. If you are unable to comment by the prescribed date, please notify this office. Reviewers may substitute this form with agency letterhead. If letterhead is used, please cite the SAI number listed above.

THIS SECTION TO BE COMPLETED BY REVIEWING AGENCY:

- ☐ No comment on this project
- ☐ Proposal supported as written
- ☒ Additional information (see below)
- ☐ Conference desired (see below)
- ☐ Conditional support (see below)
- ☐ Disapproval of funding (must specify reason below)

CLEARINGHOUSE NOTES:

Scoping occured in January 1989. Attached are your previous comments.

AGENCY COMMENTS: (use additional sheets if necessary)

This office has reviewed the water resources related section of the subject Environmental Assessment and has no particular comment. A significant record was developed at the administrative hearing of January 10, 1989. The protests to the granting of applications 51555, 51556 and 51557 were overruled on June 15, 1989 and permits to appropriate water to support the project are to be granted subject to monitoring. Applications 52847 through 52850 for additional well locations are not requesting an additional appropriation of water, but protests were timely filed and action on 52857 through 52850 is pending.

T.K. Gallagher
Reviewer's Signature

HYDRAULIC ENGINEER
Title

885-4380
Phone

6/15/89
Date

Response to Letter 7

Thank you for your comment.

Letter 8

NEVADA STATE CLEARINGHOUSE

RECEIVED
U S MAIL
[illegible]
STATE OF NEVADA
FIRE MARSHAL
CARSON CITY

OFFICE OF COMMUNITY SERVICES
1100 EAST WILLIAM, SUITE 110
CARSON CITY, NEVADA 89710
885-3187

FROM: John B. Walker, Coordinator

TO:

- ☐ Governor's Office
  - ☐ Community Services
  - ☐ State Job Training Office
- ☐ Administration
- ☐ Agriculture
- ☐ Economic Development
- ☐ Education
- ☐ Employment Security Department
- ☐ Human Resources
  - ☐ Aging Services
  - ☐ Health Division
  - ☐
- ☒ Legislative Counsel Bureau
- ☒ ☒ Minerals

- ☐ Nuclear Waste Project Office
- ☐ Prisons
- ☐ Public Service Commission
- ☐ SOICC
- ☐ State Communications Board
- ☐ Taxation
- ☐ Tourism
- ☐ Transportation
- ☐ UNR-Bureau of Mines
- ☒ UNR Library-Gov. Publications
- ☐ UNR-Dept. of Range, Wildlife, and Forestry
- ☐ Wild Horse Commission
- ☒ ☒ Wildlife

Conservation and Natural Resources

- ☒ Director's Office
- ☒ State Lands
- ☒ Conservation Districts
- ☒ Environmental Protection
- ☐ Forestry
- ☒ Historic Preservation and Archeology
- ☐ State Parks
- ☒ Water Resources
- ☒ Fire Marshal's Office
- ☒ Mine Inspector
- ☐

SAI NV # 89300051

PROJECT: E.I. - Mother Lode Gold Mine in Nye County

NV

Attached for review and comment is a copy of the aforementioned project. Please evaluate it with respect to: 1) the program's effect on your plans and programs; 2) the importance of its contribution to State and/or areawide goals and objectives; and 3) its accord with any applicable laws, orders or regulations with which you are familiar with.

PLEASE SUBMIT YOUR COMMENTS NO LATER THAN 6/14/89. Type your comments if applicable, check the appropriate box below and return the form to this office. Please do so even if you have no comment on this project. If you are unable to comment by the prescribed date, please notify this office. Reviewers may substitute this form with agency letterhead. If letterhead is used, please cite the SAI number listed above.

THIS SECTION TO BE COMPLETED BY REVIEWING AGENCY:

- ☐ No comment on this project
- ☐ Proposal supported as written
- ☒ Additional information (see below)
- ☐ Conference desired (see below)
- ☐ Conditional support (see below)
- ☐ Disapproval of funding (must specify reason below)

CLEARINGHOUSE NOTES:

Scoping occured in January 1989. Attached are your previous comments.

AGENCY COMMENTS: (use additional sheets if necessary)

8 - 1 A SITE PLAN AND PLANS FOR ANY STRUCTURES MUST BE SUBMITTED WITH FEE TO THE NEVADA ST. FIRE MARSHAL'S OFFICE FOR REVIEW BEFORE CONSTRUCTION.

Reviewer's Signature

DEPUTY STATE FIRE MARSHAL
Title

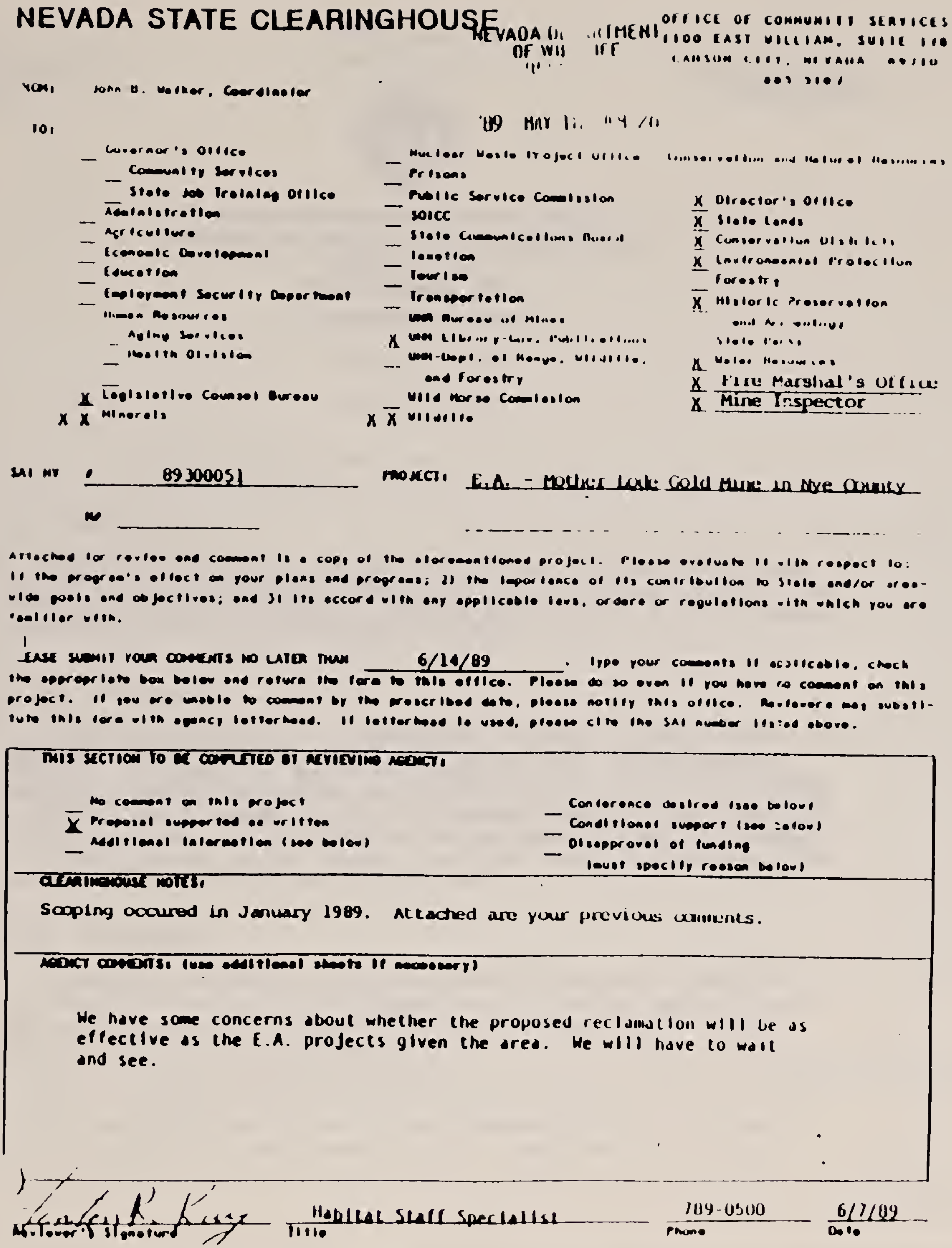
[illegible]
Phone

5-23-89
Date

Response to Letter 8

8 - 1 USNGS will comply with these requirements.

Letter 9



NEVADA STATE CLEARINGHOUSE

NEVADA D[illegible]TMENT
OF WI[illegible]IFE

OFFICE OF COMMUNITY SERVICES
1100 EAST WILLIAM, SUITE 110
CARSON CITY, NEVADA 89710
885 3107

FROM: John B. Walker, Coordinator

'89 MAY 1[illegible]

TO:

___ Governor's Office
  ___ Community Services
  ___ State Job Training Office
___ Administration
___ Agriculture
___ Economic Development
___ Education
___ Employment Security Department
Human Resources
  ___ Aging Services
  ___ Health Division
X Legislative Counsel Bureau
X X Minerals

___ Nuclear Waste Project Office
___ Prisons
___ Public Service Commission
___ SOICC
___ State Communications Board
___ Taxation
___ Tourism
___ Transportation
UNR Bureau of Mines
X UNR Library-Gov. Publications
___ UNR-Dept. of Range, Wildlife, and Forestry
___ Wild Horse Commission
X X Wildlife

Conservation and Natural Resources
X Director's Office
X State Lands
X Conservation Districts
X Environmental Protection
___ Forestry
X Historic Preservation and Archeology
State Parks
X Water Resources
X Fire Marshal's Office
X Mine Inspector

SAI NV # 89300051

PROJECT: E.A. - Mother Lode Gold Mine in Nye County

NV ______

Attached for review and comment is a copy of the aforementioned project. Please evaluate it with respect to: 1) the program's effect on your plans and programs; 2) the importance of its contribution to State and/or area-wide goals and objectives; and 3) its accord with any applicable laws, orders or regulations with which you are familiar with.

PLEASE SUBMIT YOUR COMMENTS NO LATER THAN 6/14/89. Type your comments if applicable, check the appropriate box below and return the form to this office. Please do so even if you have no comment on this project. If you are unable to comment by the prescribed date, please notify this office. Reviewers may substitute this form with agency letterhead. If letterhead is used, please cite the SAI number listed above.

THIS SECTION TO BE COMPLETED BY REVIEWING AGENCY:

___ No comment on this project
X Proposal supported as written
___ Additional information (see below)
___ Conference desired (see below)
___ Conditional support (see below)
___ Disapproval of funding (must specify reason below)

CLEARINGHOUSE NOTES:

Scoping occured in January 1989. Attached are your previous comments.

AGENCY COMMENTS: (use additional sheets if necessary)

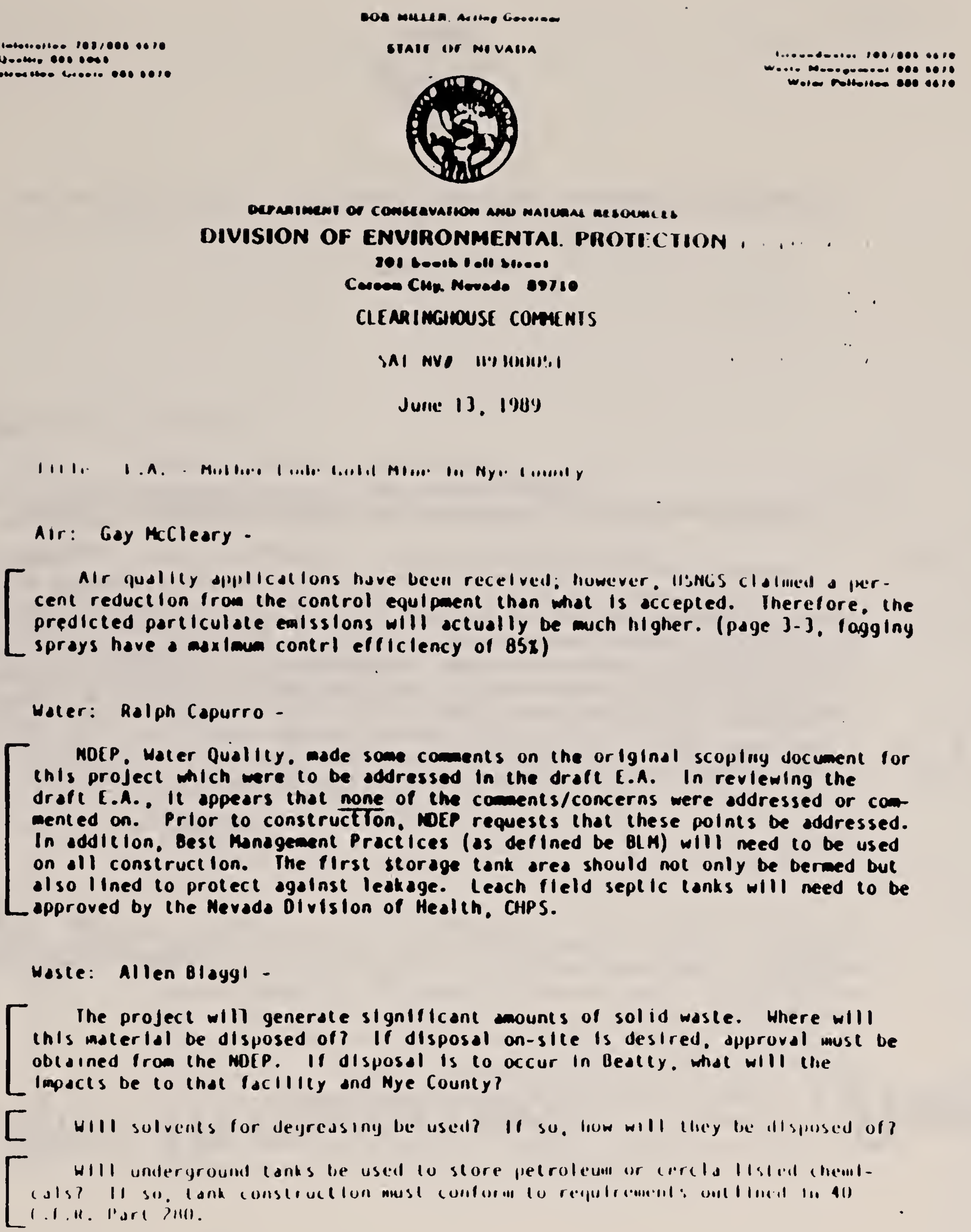
9 - 1 We have some concerns about whether the proposed reclamation will be as effective as the E.A. projects given the area. We will have to wait and see.

Habitat Staff Specialist — 789-0500 — 6/7/89
Reviewer's Signature — Title — Phone — Date

Response to Letter 9

9 - 1 Please see the response to comment 3-6.

Letter 10



BOB MILLER, Acting Governor

STATE OF NEVADA

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
201 South Fall Street
Carson City, Nevada 89710

CLEARINGHOUSE COMMENTS

SAI NV# 89300051

June 13, 1989

Title: E.A. - Mother Lode Gold Mine in Nye County

Air: Gay McCleary -

10 - 1 Air quality applications have been received; however, USNGS claimed a percent reduction from the control equipment than what is accepted. Therefore, the predicted particulate emissions will actually be much higher. (page 3-3, fogging sprays have a maximum contrl efficiency of 85%)

Water: Ralph Capurro -

10 - 2 NDEP, Water Quality, made some comments on the original scoping document for this project which were to be addressed in the draft E.A. In reviewing the draft E.A., it appears that none of the comments/concerns were addressed or commented on. Prior to construction, NDEP requests that these points be addressed. In addition, Best Management Practices (as defined be BLM) will need to be used on all construction. The first storage tank area should not only be bermed but also lined to protect against leakage. Leach field septic tanks will need to be approved by the Nevada Division of Health, CHPS.

Waste: Allen Biaggi -

10 - 3 The project will generate significant amounts of solid waste. Where will this material be disposed of? If disposal on-site is desired, approval must be obtained from the NDEP. If disposal is to occur in Beatty, what will the impacts be to that facility and Nye County?

10 - 4 Will solvents for degreasing be used? If so, how will they be disposed of?

10 - 5 Will underground tanks be used to store petroleum or cercla listed chemicals? If so, tank construction must conform to requirements outlined in 40 C.F.R. Part 280.

Response to Letter 10

10 - 1 The Draft EA air quality analysis was based on information presented in the air quality application submitted to the Nevada Department of Environmental Protection (NDEP). This information has since been revised by the applicant in response to questions and concerns expressed by NDEP. The EA has been revised to reflect the new data (see Appendix A, Errata). NDEP has recently issued the air permit for this project.

10 - 2 The referenced comments on the original scoping document were addressed in the Draft Environmental Assessment. The following is an item-by-item discussion of each of the four original comments.

- One comment concerned the effect on water quality of a possible breach of the ponds or leak of the liners. A discussion of this subject is contained in Section 3.3 and Appendix A of the Draft EA.
- One comment concerned planting of topsoil and other stockpiles. In Section 1.4.5.2 of the Draft EA, it is stated that topsoil stockpiles will be seeded with fast-growing species. Opportunities do not exist to plant other stockpiles due to their active nature.
- One comment indicated that diversions need to accommodate a 100-year, 24-hour storm event; water diversions will be designed and constructed in compliance with these requirements.
- It was suggested that reclamation be coordinated with other agencies. The U.S. Soil Conservation Service has been contacted and will continue to be involved, as appropriate.

Requirements of permits issued by the State of Nevada are designed to ensure implementation of Best Management Practices.

The storage tank area will be constructed in compliance with all federal and state regulations for groundwater protection.

Once the final location of the sanitary waste system has been determined, USNGS will obtain the necessary approval from the Nevada Division of Health.

10 - 3 Solid waste from the Mother Lode Project will be collected by a licensed contractor for disposal at the county landfill west of Beatty. The landfill has an estimated remaining life of approximately 10 years.

10 - 4 Used solvents and used oil will be picked up by an outside vendor for offsite treatment and disposal.

10 - 5 There will be no underground storage tanks associated with the Mother Lode Project.

Letter 10 Continued

Clearinghouse Comments
SAI NV# 89300051
June 13, 1989
page 2

Groundwater: Tom Fronapfel -

10 - 6 In addition to the comments made on 2/9/89, the facility must now meet the criteria specified in the mining regulations adopted on May 5, 1989. Additional comments are: What is meant by the statement that there will be no "long-term adverse impact to groundwater quantity or quality"? Does this mean there will be short-term impacts? The leach pad liner system must meet the criteria of Section 74 of the May 5, 1989 regulations. Reclamation of the site must not impact any stabilization which has been done on waste rock piles or leach pads. Evaporation of heap solutions may not be adequate to meet the regulatory requirements for closure; the regulations require that the rinsate be 0.2 mg/liter WAD cyanide, unless it can be demonstrated that this level cannot be achieved.

10 - 7 The facility representatives must meet with Groundwater staff to discuss the various permit requirements prior to application submittal.

6/13/89
sld

Response to Letter 10 Continued

10 - 6 As described in Section 3.3.1.1 of the Draft EA, temporary drawdown of the groundwater level in the vicinity of the wells is expected. It is not expected that this drawdown will impact any water users, and the groundwater levels are expected to recover within 7 to 14 years. No effect on groundwater quality is expected.

A memorandum of understanding between the BLM and NDEP is being developed to address mine closure requirements.

10 - 7 USNGS has met with the NDEP groundwater staff to discuss their Plan of Operation and the permitting requirements for the Mother Lode Project.

Letter 11

[illegible]
Director
Department of Conservation
and Natural Resources

[illegible]
Administrative Officer

Address reply to
Division of Conservation Districts

Capitol Complex
Carson City, Nevada [illegible]
Telephone
835 4365

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF CONSERVATION DISTRICTS
June 8, 1989

MEMORANDUM

TO: John B. Walker, Coordinator

FROM: Chris K. Freeman, Conservation District Specialist

SUBJECT: SAI NV #8900051 - Mother Lode Gold Mine

11 - 1 1. The reclamation plan covered in the Draft Environmental Assessment Proposed Mother Lode Project does a good job of identifying actions that are to be taken. However, reclamation needs to be keyed to the future success of the disturbed lands being able to support wildlife and other multiple uses.

11 - 2 It is stated on page 1-23 that it would be uneconomical to backfill with waste material. Some backfill may be beneficial if it lessens the steepness of slopes and reduces erosion. An area that is to receive topsoil will also take a better planting if the slopes are not to steep.

In looking at the economics it would appear from the information given in the assessment that to produce 25,000 ounces of gold a year that requires 1.5 million tons of earth to be moved the gross profit is $5.83 per ton. This is assumed gold has a value of $350.00 per ounce. If the overhead cost is 42% then $2.46 a ton is needed to process the ore and regain capitol investments. This would leave a profit of $3.37 a ton for every ton of earth moved. Therefore a cost of $.85 a ton to backfill has some potential consideration in areas that could benefit from a little extra work to put them back into productive habitat.

Response to Letter 11

11 - 1 Please refer to the response to comment 3-6 for a discussion of the BLM's reclamation goals.

11 - 2 In addition to the economic rationale provided in Section 1.5 of the Draft EA, another reason for not backfilling the pit is the potential for USNGS to mine the sulfide deposit beneath the oxide deposit at some time in the future.

It should be noted that the economic analysis presented in Section 1.5 of the Draft EA does not include such additional costs as permitting, water supply development, provision of an employee trailer court, and provision of a municipal water pipeline for Beatty.

Letter 11 Continued

John B. Walker
June 8, 1989
Page 2

Attached is a copy of an article from the May issue of the Journal of Range Management that contains information on reclamation.

CKF/mc

Attachments

Animal performance and plant production from continuously grazed cool-season reclaimed and native pastures

L. HOFMANN AND R.E. RIES

Abstract

The Surface Mining Control and Reclamation Act of 1977 requires that surface-mined land be revegetated with "the same seasonal variety", meaning species of the same season of growth as the species native to the area. Our objective was to compare season-of-grazing use of pastures comprised of introduced cool-season species with pastures comprised of a mix of native warm- and cool-season species. The study was conducted on surface-mined land near Center, North Dakota, dominated by smooth bromegrass (*Bromus inermis* Leyss.) and alfalfa (*Medicago sativa* L.) and on adjacent unmined mixed prairie. Pastures were 1.86 ha in size and stocked with 2 yearling steers (*Bos* spp.) each. Grazing was started in May or June and ended in late September or early October for 96 days in 1982 and 126 days each in 1983, 1984, and 1985. Liveweight gain increased from mid June through August and then remained constant on all pastures. Herbage dry matter yield from reclaimed pastures was equal to or greater than yield from native pastures each year. The season-of-grazing use was no different for reclaimed cool-season pastures than for native mixed prairie, and there was no evidence that species with the same growing season as those native to the area were necessary to provide season-long grazing use. Cool-season forage species are easier to seed, establish, and less expensive to buy and can be used to revegetate surface-mined land for season-long grazing use.

Key Words: surface-mined land, warm-season species, ground cover, species composition, liveweight gain, herbage dry matter

In the northern Great Plains, most of the native grasslands contain a mixture of cool- and warm-season grass, legume, and forb species and generally provide season-long-grazing use. Surface-mined land can be revegetated at less expense and more easily with cool-season introduced plant species, but there is general concern that these species will not provide season-long-grazing use. This is the primary reason that the Surface Mining Control and Reclamation Act of 1977 (The Act), Public Law 95-87, required that the permanent vegetative cover establishment should be "of the same seasonal variety native to the area of land to be affected" [Sec. 515. (b) (19)].

Barker et al. (1977) found that cool-season species, especially the more commonly used introduced species, were much easier to establish than warm-season species on mined land. DePuit (1982) and Ries (1982) summarized the use of cool-season and warm-season perennial grasses, respectively, for revegetation of mined land in the northern Great Plains. The greater ease of revegetating with cool-season perennial grass species than with warm-season grasses also was apparent from these papers, and indicated that similar "seasonal variety" may be one of the most difficult criteria to attain.

DePuit et al. (1980) established a predominantly native plant community by excluding introduced species from the seeding mix. Even though warm-season grasses, shrubs, and forbs were seeded, the established native community was dominated by cool-season perennial grasses and fourwing saltbush (*Atriplex canescens*).

Williamson (1984) successfully established a seasonally balanced grassland by seeding late in spring, irrigating during the first growing season, and weighing the seed mixture in favor of warm-season species. Conventionally seeded areas produced vegetation of predominantly cool-season species. Young et al. (1983) studied use of cattle grazing to enhance native species composition. Two grazing periods did not produce a desired change in plant composition nor did interseeding with native species and grazing.

Section 515 (b)(2) of the Act "requires the operator, as a minimum, to restore the land affected to a condition capable of supporting the uses which it was capable of supporting prior to any mining, or higher or better uses of which there is a reasonable likelihood." There are few data comparing productivity of animals grazing reclaimed mined lands dominated by cool-season species with animals grazing seasonally balanced native rangeland at the same stocking rates for the same number of grazing days. Our objectives were to determine if the length of grazing use would differ between reclaimed pastures composed of vegetation with strikingly different seasonal growth patterns from native range and to quantify the effect on animal productivity.

Materials and Methods

The study was located near Center, North Dakota, on a surface-mined site previously used for a grazing intensity study (Hofmann et al. 1981, Hofmann and Ries 1988) and on adjacent unmined native rangeland. Original reclaimed and native soils are, Cabba (loam mixed, calcareous, frigid, shallow, Typic Ustorthents) and Sen (fine-silty, mixed Typic Haploborolls). Mined spoils were reshaped to near original contour and covered with approximately 10 cm of clay loam topsoil material.

The reclaimed area was fertilized only once with 12-12-0 kg ha⁻¹ N, P, K in spring, 1973, and seeded with a mixture of smooth bromegrass (*Bromus inermis* Leyss.), crested wheatgrass (*Agropyron desertorum* [Fisch. ex Link] Schult.), intermediate wheatgrass (*Agropyron intermedium* [Host] Beauv.), alfalfa (*Medicago sativa* L.), and yellow sweet clover (*Melilotus officinalis* Lam.). The site was divided into 6 pastures with 2 replicates of 3 grazing intensities from 1976 through 1981 (Hofmann and Ries 1988). Two ungrazed enclosures, located within each pasture, provided an ungrazed check.

Enclosure size was adjusted following grazing in 1981 in order to obtain pastures with 1.86 ha grazable area. The pasture designated Reclaimed I (Fig. 1) included 0.62 ha of the formerly heavily grazed pasture combined with 1.24 of moderately grazed pasture. Lightly grazed pastures were reduced to 1.86 ha grazable area and are designated Reclaimed II. Two additional pastures with 1.86 ha grazable area were constructed on unmined native rangeland that had a condition rating of 59 (good) using SCS range condition classification technique (Dyksterhuis 1949), located 100 meters from the reclaimed site. One ungrazed unharvested sample was

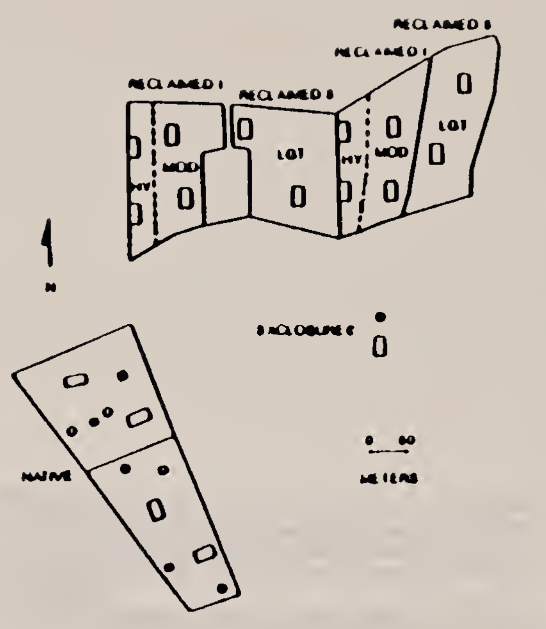


Fig. 1. *Location of Reclaimed I, Reclaimed II, native pastures, and enclosure for season-of-grazing use study; and heavily (Hy), moderately (Mod), and lightly (Lgt) grazed pastures from former grazing intensity study.*

obtained from each of the 6 enclosures which provided 6 subsamples from each replicate. Subsamples were averaged when analysis of variance showed no significant ($P \leq 0.05$) difference. Two enclosures in each replicate were 15.2 × 30.5 m in size while the others were adjusted in size to produce 1.86 ha grazable areas.

All pastures were grazed from 15 June through 21 September for a 96-day season in 1982. Grazing began on 25, 30, and 29 May in 1983, 1984, and 1985 and ended on 28 September and 3 and 2 October, respectively, for a 126-day season each of these 3 years.

Each pasture was stocked with 2 yearling Hereford × Simmental steers (*Bos* spp.) and grazed at 2.9 AUM ha⁻¹. The SCS guide recommends an initial stocking rate of 1.0 AUM ha⁻¹ for this site. Overnight off-water shrunk starting weights ranged from 240 to 380 kg and averaged 325 kg head⁻¹ for the 4 years. Animals were weighed at 14-day intervals throughout the grazing season.

Thirty 10-pin point frames (Levy and Madden 1933) were read within each former heavily and moderately grazed section of Reclaimed I, and in Reclaimed II and in native pastures each year. Each frame was randomly located and oriented by tossing a meter stick and placing the frame alongside where it fell. Five frames were read within each enclosure. Basal point counts at the soil surface were recorded for live plant cover, plant species, standing or ground litter, and bare ground.

Precipitation data were collected by the National Oceanic and Atmospheric Administration at Center, North Dakota, about 3 km west-northwest of the study area. Annual June through May precipitation was used because it was better correlated to vegetation dry matter than January through December precipitation (Hofmann and Ries 1988).

Total herbage dry matter within the grazed portion of each pasture was determined by mowing six 0.3 × 3.0 m strips at a 5.0 cm height with a sickle bar mower immediately before grazing started, the first week in August, and immediately after grazing ended. Season-long dry matter was determined in October by mowing a 0.3 × 3.0 m area with the sickle bar mower under each of 6 protective cages that were randomly placed within each pasture before grazing began. One 0.3 × 3.0 m area was similarly harvested within each enclosure each time vegetation was sampled.

Percent live, litter, and bare ground cover means were analyzed as a completely random design (CRD) ($P \leq 0.05$). The Waller-Duncan test was used to rank means for reclaimed and native areas. However, plant species composition was not statistically compared between reclaimed and native plant communities because they were completely different. Change in cover or plant species from 1982 to 1985 was tested using paired comparisons ($P \leq 0.05$). Plant dry matter and animal gain means were tested using CRD and the Waller-Duncan test ($P \leq 0.05$).

Results and Discussion

Annual June through May precipitation for 1981, 1982, and 1983 was about 90 mm above the 1914–1970 yearly average of 433 mm whereas 1984 and 1985 precipitation was approximately 100 mm below average.

Percent live plant cover on the native areas was significantly greater than on the reclaimed areas in both 1982 and 1985 (Table 1). The only measurable cover change from 1982 to 1985 was an increase of live cover on the previous moderately grazed portion of Reclaimed I. There was less litter cover and more bare ground on the Reclaimed I pastures at the start and the end of the study than on any other areas. Total ground cover (live plant plus litter) in 1985 on the previously heavily and moderately grazed portions of Reclaimed I still did not equal that of the native site. However, all areas had less than 30% bare soil, which has been suggested as the maximum acceptable level for adequate soil erosion protection (Packer 1951, Marston 1952, Hofmann 1986).

Table 1. Percent ground cover on reclaimed and native pastures measured by basal point counts on 15 June 1982 and 28 May 1985.

Treatment	Former treatment	Live plant		Litter[1]		Total		Bare ground	
		82	85	82	85	82	85	82	85
		%							
Reclaimed									
I	Heavy	11b[2]	10b	50c	68c	61c	78c	39a	22a
	Moderate	12b	17b*	74bc	73bc	86b	90b	14b	10b
II	Light	13b	16b	84ab	78ab	97a	94ab	3c	6bc
Ungrazed		10b	16b	87a	81a	97a	97a	3c	3c
Native									
Grazed		30a	30a	67cd	67c	97a	97a	3c	3c
Ungrazed		34a	31a	62d	66c	96a	87a	4c	3c

[1] Contained <1% rock.
[2] Means within columns followed by the same letter are not significantly different at the $P \leq 0.05$ (Waller-Duncan test K = 100).
*Significant change from 1982 to 1985 (t test $P \leq 0.05$).

Authors are agronomist and range scientist, Northern Great Plains Research Laboratory, P.O. Box 459, Mandan, North Dakota 58554.

Contribution from Northern Great Plains Research Laboratory, USDA ARS.

Manuscript accepted 17 November 1988.

Species composition of the reclaimed site was greatly different from the native site; therefore, meaningful species composition comparisons between reclaimed and native plant communities were not possible (Table 2). This is a major problem of measuring reclamation success by comparing mined areas reclaimed with permanent vegetation to undisturbed permanent vegetation areas. Grazing changed species composition little within reclaimed or native sites (Table 2). Except for Kentucky bluegrass (*Poa pratensis* L.), species composition was similar for 1982 and 1985, thus only 1985 composition is presented.

Table 2. Percent live plant cover by species on reclaimed and native pastures measured by basal point counts on 28 May 1985.

Species	Reclaimed I	Reclaimed II	Reclaimed Ungrazed	Native Grazed	Native Ungrazed
	% of live ground cover				
Cool season					
Bromus inermis	64ᵃ	64	63	0	0
Medicago sativa	30	30	31	0	0
Agropyron desertorum & intermedia	1	1	1	0	0
Carex spp	0	0	0	10	33
Poa pratensis	0	0	0	26ᵇ	11
Stipa viridula & comata	0	0	0	17	11
Agropyron smithii	0	0	0	0	3
Other cool-season grass	1	2	1	10	10
Warm season					
Bouteloua gracilis	0	1	0	10	12
Other warm-season grass	0	0	0	3	7
Forbs	3	4	3	17	11

ᵃWithin reclaimed and native pastures, means in rows were not significantly different at P≤0.05

ᵇSignificant (P≤0.05) increase from 10% in 1982 to 26% in 1985.

Species on the reclaimed site were not of the same season of growth as the species native to the area. Throughout the study, the native site ranged from 10 to 22% blue grama [*Bouteloua gracilis* (H.B.K.) Lag. ex Griffiths] plus about 8% other warm-season grasses. Although we previously reported that the reclaimed site was being invaded by other species (Hofmann and Ries 1988), none have been warm-season species. The reclaimed area remained a cool-season midgrass-alfalfa community dominated by introduced species.

There was no difference in liveweight gain within years or across years. One measure of reclamation success is that production of reclaimed land equals or exceeds production of similar unmined land. Yearly gain from grazing on reclaimed mined pasture equalled gain on native pasture each year, suggesting adequate reclamation for animal production. Gains on both reclaimed and native pastures were somewhat lower than those reported by Sarvis (1941), but stocking rate was higher (0.95 vs 1.2 ha/steer).

Within grazing treatments, cumulative liveweight gain changed from one weighing period to the next as the season progressed (Fig. 2). Liveweight gain steadily increased from June through September and then leveled off with slight decline for late September. This is similar to the June through September yearling steer gain for native range in the northern Great Plains reported by Sarvis (1941).

No pasture differences were obtained for any weighing period except mid September. Then steers grazing Reclaimed II pastures had higher gain than steers grazing native. Since all pastures were grazed for the same number of days, the pattern for average daily steer gains (ADG) and liveweight gains was the same.

The native pasture was used as a standard for determining the season-of-grazing use since the objective was to determine if the reclaimed pastures were different. There was no evidence anytime during the study that the native pasture produced season-of-grazing use that was superior to the reclaimed pastures.

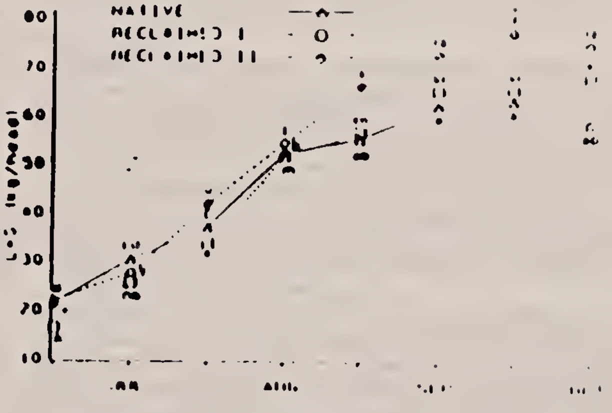


Fig. 1. Cumulative liveweight gain of steers grazing reclaimed and native pastures at 14-day intervals throughout the grazing season (4 year average). Points on the same line labeled with the same letter are not significantly different (P≥0.05). *Reclaimed II significantly greater than native (P≤0.05).

Herbage production from the reclaimed site was greater than from the native site based on the dry matter sampled from the enclosures (Table 3). Seasonal dry matter from cages was greater from Reclaimed II pastures than from Reclaimed I pasture suggesting carry-over grazing effects from the previous intensity study. Dry matter production from grazed reclaimed pastures was at least equal to that from grazed native pasture at each sampling throughout the grazing season. Thus, adequate reclamation, measured by herbage production, was achieved after 10 years of grazing use.

Table 3. Total herbage dry matter harvested several times per year on reclaimed and native pastures. Average of 4 years.

Treatment	Pre graze June	Mid graze Aug	Post graze Oct	Seasonalᵃ Oct
	kg/ha			
Reclaimed				
Ungrazed	3970aᵇ	4490a	1180b	1180b
I	2080d	3190c	1080c	3510c
II	2970b	2840b	2240b	3150b
Native				
Ungrazed	3470c	2800b	2400b	2680c
Grazed	1970d	1940c	1360c	1130c

ᵃCurrent year dry matter sampled from protective cages

ᵇDry matter sampled from ungrazed enclosure

ᶜWithin columns, means followed by same letter are not different at P≤0.05 (Waller-Duncan test, K = 100)

Seasonal dry matter sampled from cages on Reclaimed I pasture remained relatively constant during the 4 years whereas similarly protected vegetation on native pastures declined from 1983 to 1985. The lack of difference between Reclaimed I and native at the start of the study followed by a decline in dry matter on native pastures in 1984 and 1985 suggested that the native range may have been grazed at or above its productive capacity. Range condition rating declined from 39 to 32 (31-75 = good condition) primarily because of an increase in Kentucky bluegrass (Table 2). Although there were no significant differences in liveweight gain per year among pastures or years, animal gain and herbage dry matter trends were similar. Liveweight gains were significantly correlated to season-long dry matter, r = .37 (P<0.05).

Schuman et al. (1986) grazed a predominantly cool season native plant community in Wyoming for 3 years. They reported the revegetated mined lands were successfully reclaimed and would support livestock grazing. They suggested a more direct means for determining adequacy of reclamation would be to evaluate its potential for the intended post-mining use. Laycock and Layden (1986) achieved cattle gains of 1.1 to 1.4 kg day⁻¹ summer long while grazing reclaimed lands seeded to high producing introduced species. These data indicated potentially high animal productivity from introduced pasture species.

Based on intended use, past studies and this study suggest there is no need to have either a warm-season species component or diversity similar to premined rangeland to have comparable seasonal grazing. When grazing management practices used were the same as those recommended for grazing native range, animal performance was the same. In the northern area of the Great Plains, with average precipitation of 450 mm per year, cool season, introduced grass species had the same utility of grazing use as native species. Since cool season species are more readily established, easier to seed, less expensive to buy with a more available seed supply, we suggest they can be used to revegetate surface-mined lands for season-long-grazing use.

References

Barker, W.R., W.E. Ries, and P.E. Nyren. 1977. Forage species establishment and productivity on mined land. North Dakota Agr. Exp. Sta. Farm Res. 34:8-12.

DePuit, E.J. 1982. Cool-season perennial grass establishment on northern Great Plains mined lands: Status of current technology. p. B-1-1–B-1-34. In: Proc., Mining and Reclamation of Coal Mined Lands in the Northern Great Plains Symp., Billings, Mont. 8-9 March 1982. Montana Agr. Exp. Sta. Rep. 194.

DePuit, E.J., J.G. Coenenberg, and C.L. Skilbred. 1980. Establishment of diverse native plant communities on coal surface-mined lands in Montana as influenced by seeding method, mixture, and rate. Montana Agr. Exp. Sta. Res. Rep. 163.

Dyksterhuis, E.J. 1949. Condition and management of range land based on quantitative ecology. J. Range Manage. 2:104-115.

Hofmann, L., and R.E. Ries. 1988. Vegetation and animal production from reclaimed mined land pastures. Agron. J. 80:40-44.

Hofmann, L., R.E. Ries, and R.J. Lorenz. 1981. Livestock and vegetative performance on reclaimed and nonmined rangeland in North Dakota. J. Soil & Water Conserv. 36:41-44.

Laycock, W.A., and J. Layden. 1986. Cattle production on reclaimed mined lands in northwestern Colorado. p. 183. In: Proc. Rangelands: A Resource under Siege. 2nd Int. Rangeland Cong., Adelaide, Australia. May 1984. Australian Academy of Science, Canberra A.C.T. Australia.

Levy, E.B., and E.A. Madden. 1933. The point method of pasture analyses. New Zealand J. Agr. 46:267-279.

Meeuwig, R.O. 1970. [illegible] requirements for [illegible] runoff control on aspen sites in northern Utah. J. Forest. 50:[illegible]

Packer, P.E. 1951. An approach to watershed protection criteria. J. Forest. 49:639-644.

Ries, R.E. 1982. Warm-season grasses for revegetation in the northern Great Plains. p. B-2-1–B-2-15. In: Proc. Mining and Reclamation of Coal Mined Lands in the Northern Great Plains Symp., Billings, Mont. 8-9 March 1982. Montana Agr. Exp. Sta. Rep. 194.

Ries, R.E., and L. Hofmann. 1986. Relationship of ground cover of short and midgrass communities to soil loss. North Dakota Farm Res. 44:29-31.

Sarvis, J.T. 1941. Grazing investigations on the Northern Great Plains. North Dakota Agr. Exp. Sta. Bull. 308.

Schuman, G.E., D.T. Booth, J.W. Waggoner, and F. Rauzi. 1986. The effect of grazing reclaimed mined lands on forage production and composition. p. 163-164. In: Proc. Rangelands: A Resource under Siege. 2nd Int. Rangeland Cong., Adelaide, Australia. May 1984. Australian Academy of Science, Canberra A.C.T. Australia.

Wilhelmson, R.L. 1984. Reestablishing North Dakota grasslands after mining with emphasis on seasonality and use of native species. J. Soil & Water Conserv. 39:387-391.

Young, S.A., R.R. Renwick, and P.L. Plantenberg. 1983. Use of grazing cattle during post seeding management of revegetated minespoils. Final Report. Montana Agr. Exp. Sta.

Letter 12

STATE OF NEVADA

BOB MILLER
Acting Governor

JEAN FORD
Director

OFFICE OF THE GOVERNOR
OFFICE OF COMMUNITY SERVICES
Capitol Complex
Carson City, Nevada 89710
(702) 885-5187

June 23, 1989

Mr. Theodore Angle
Area Manager
Bureau of Land Management
P.O. Box 911
Building 102 Military Circle
Tonopah, Nevada 89049

Re: SAI NV #89300051 Project: E.A. - Mother Lode Gold Mine in Nye County

Dear Mr. Angle:

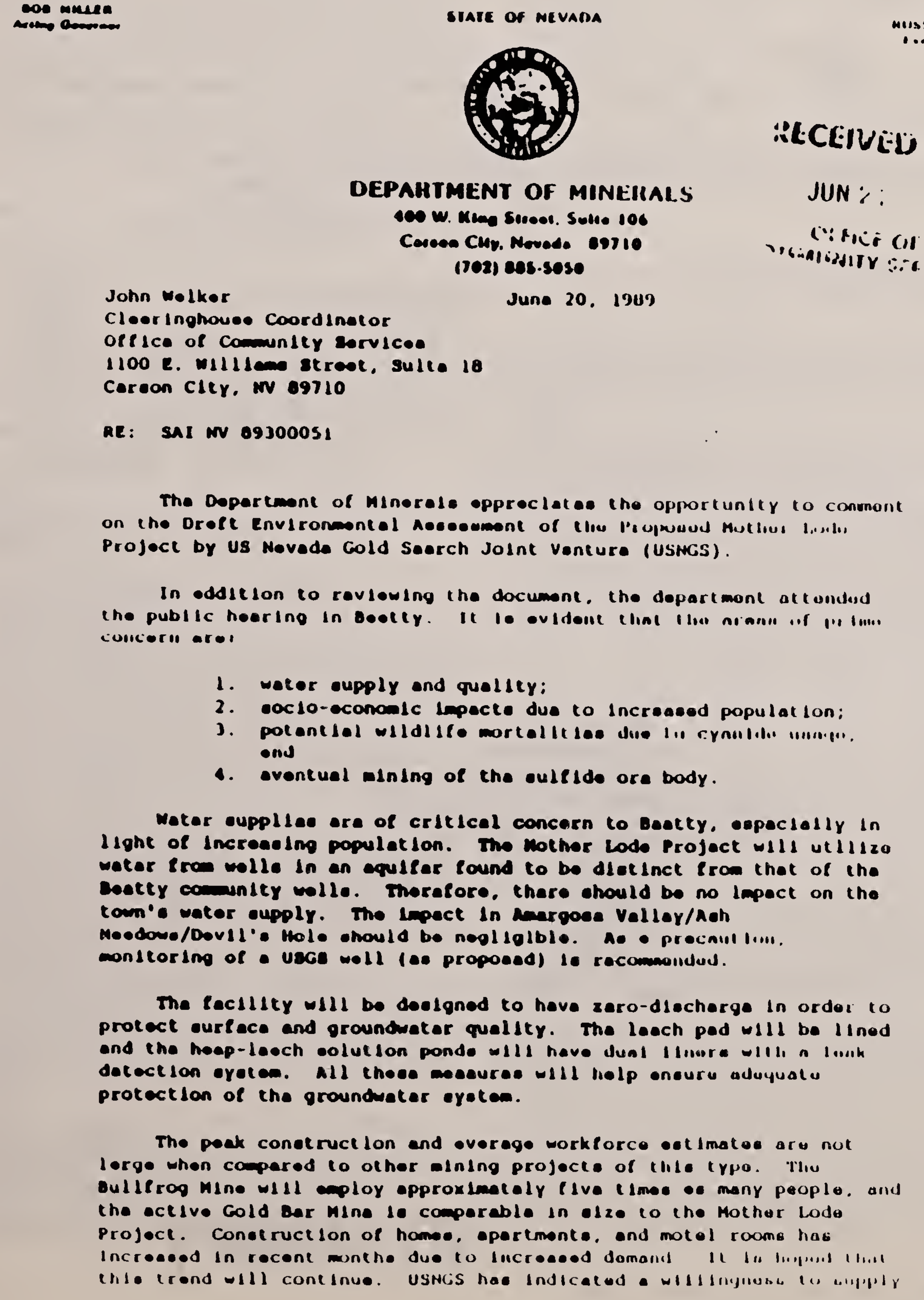
Attached is an additional comment from the Nevada Department of Minerals that was received after our previous letter to you. Please incorporate this comment in your decision making process.

Sincerely,

John B. Walker, Coordinator
State Clearinghouse, NOCS/SPOC

JBW/ll
Enclosure

Letter 12 Continued



BOB MILLER
Acting Governor

STATE OF NEVADA

RUSSELL A. FIELDS
Executive Director

DEPARTMENT OF MINERALS
400 W. King Street, Suite 106
Carson City, Nevada 89710
(702) 885-5050

RECEIVED ON
JUN 2
OFFICE OF
COMMUNITY SERVICES

June 20, 1989

John Walker
Clearinghouse Coordinator
Office of Community Services
1100 E. Williams Street, Suite 18
Carson City, NV 89710

RE: SAI NV 89300051

The Department of Minerals appreciates the opportunity to comment on the Draft Environmental Assessment of the Proposed Mother Lode Project by US Nevada Gold Search Joint Venture (USNGS).

In addition to reviewing the document, the department attended the public hearing in Beatty. It is evident that the areas of prime concern are:

1. water supply and quality;
2. socio-economic impacts due to increased population;
3. potential wildlife mortalities due to cyanide usage, and
4. eventual mining of the sulfide ore body.

Water supplies are of critical concern to Beatty, especially in light of increasing population. The Mother Lode Project will utilize water from wells in an aquifer found to be distinct from that of the Beatty community wells. Therefore, there should be no impact on the town's water supply. The impact in Amargosa Valley/Ash Meadows/Devil's Hole should be negligible. As a precaution, monitoring of a USGS well (as proposed) is recommended.

The facility will be designed to have zero-discharge in order to protect surface and groundwater quality. The leach pad will be lined and the heap-leach solution ponds will have dual liners with a leak detection system. All these measures will help ensure adequate protection of the groundwater system.

The peak construction and average workforce estimates are not large when compared to other mining projects of this type. The Bullfrog Mine will employ approximately five times as many people, and the active Gold Bar Mine is comparable in size to the Mother Lode Project. Construction of homes, apartments, and motel rooms has increased in recent months due to increased demand. It is hoped that this trend will continue. USNGS has indicated a willingness to supply

Response to Letter 12

Thank you for your comment.

Letter 12 Continued

employee housing, if necessary, provided the mine life is expanded beyond the present estimates.

This project is relatively short-term as envisioned in the Environmental Assessment. The mining company is cognizant of community needs directly attributable to its operation. This is demonstrated by the offer to construct a medical helipad, hire a part-time librarian, and supply water to Beatty equal to that used by its employees and their dependents.

To mitigate potential wildlife mortalities the Mother Lode Project will employ netting and fencing for its heap-leach solution ponds. These methods have proved successful in significantly reducing mortalities and are recommended by both the U.S. Fish and Wildlife Service and Nevada Department of Wildlife.

In the event that the sulfide ore body can be mined cost-effectively, a new environmental assessment will be required. Therefore, this problem need not be addressed further at this time.

Overall, this draft Environmental Assessment addresses potential environmental problems and their mitigation. It is important for the company to continue its commitment to maintaining dialogue with the community. USNGS appears to have responded to all requests where feasible.

The Beatty area, and Nye County as a whole, should benefit by additional employment opportunities, increased tax revenues, and stimulation to the private sector economy.

The Nevada Department of Minerals supports the Mother Lode Project as it is reasonable, consistent with local and county land use objectives, and consistent with other operations in the state.

Sincerely,

Walter S. Lombardo
Las Vegas Office

WL/lw

BLM Library
Denver Federal Center
Bldg. 50, OC-521
P.O. Box 25047
Denver, CO 80225